Johnsons
ARITHMETICK
In two BOOKES:

The first of Vulgar Arithmetick with easie Rules to worke all the first four parts of Arithmetick, in whole Numbers and Fractions.

The second of Decimall Arithmetick, whereby all Fractionall Operations are wrought in whole Number, in Merchants Accompts, without Reductions; with the perfect working of Interests and Annuities.

By JOHN JOHNSON *Surveyer, and Practitioner in the Mathematicks.*

The Fift Edition.

Whereto is added Tables of Interest exactly calculated at 10, 8, 7, and 6 *per cent.* With other Tables: as The Reduction of Weighes; Value of Leases and Annuities; The weight and value of English Gold; Rebate at 8 *per cent.* very delightfull and profitable.

London, Printed by *R.C.* for *John Sweeting*, at the *Angel* in *Popes-head Alley*, 1649.

Alors j'ai vu, j'ai vu et j'ai entendu Homme

Illa ignis grauior est quam quicquid Homo
Pan potest in hac Vita &c The fier of purgatory
is more griueous then any Paine mean may suffer in this Life

An excelent saying of Saint
Augustin

3
~~8504 a 6~~
~~8504 a 10~~
1509/1996

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BRITISH MUSEUM

To the Right Honourable and Worſhipfull the Merchant Adventurers of London *and* Briſtoll.

THE very Arts (Right Honourable and Worſhipfull) which were wont to beare the attributions of [*honeſtæ & liberales*] ſeem now to temporize, and to have learned the new-found skill of equivocation. For, howſoever the former of theſe denominations adhereth conſtantly unto the Profeſſors of Mathematick Sciences; yet the other, which was once derived [*a liberalitate*] and then intimated that they were anciently accuſtomed to perform liberall recompence to their lovers and followers, hath now (to ſpare coſt) purchaſed a different etymology [*a libertate*] as properly accommodate to ſuch as are [*liberi*] freeborne, or (as our peculiar terme carryeth) Freemen. Which being ſo, and ſeeing that in this particular, as well as in many other of greater conſequence, *Tempora mutantur*—: I am thereby enforced to make up the old verſe, adding —*& nos mutamur in illis*; and to apply my long experience, together with tedious ſtudies beſtowed in this preſent Art of Numbers, to the uſe and behoof of thoſe perſons, to whom by the generall appellation it properly belongeth, namely, to the ſtudious thereof in theſe Honourable Cities. Which is the cauſe that I preſume (without farther ſelf-praiſe of what I have brought more uſefull, more eaſie, or more certain and delightfull in the operations, then hath been ſeen before) to preſent my labours to your Honourable and Worſhipfull judgments, to whom I owe of duty, whatſoever can be of me performed, to the furtherance of Art, and the honour of theſe noble Cities, and the worthy Companies therein.

Your Honours and Worſhips devoted
in all Humble reſpect,

JOHN JOHNSON, *Surveighor*

The Epistle to the Reader.

GEntle and Curteous Reader, having for many years past spent my time both in reading, practising, and conferring with others in and about the study of the Mathematical Sciences; and through great pains and travail at the request of divers Worshipfull Gentlemen, Merchants, and others of my very loving friends; I have at last collected and gathered together many excellent Rules and easie Abbreviations in the Science of Arithmetick, which at the intreaty, and by the means of the help of some of them; I have at last made bold here to present abroad unto the Worlds view, the first fruits of some idle hours study; the most part whereof I do acknowledge to have gotten by the practice and use of the most excellent Instrument, invented by Mr. *William Pratt*, called, *The Jewel of Arithmetick*, in which I have done the best of my endeavours, not to hide that Talent in the earth, which God hath bestowed upon me for the benefit of others; but rather to his great glory and praise, and for the benefit of my Country, and for the furthering of all that are studious in the Art of Numbers, I have laboured to set it forth in the most brief, plain, and easie manner that I could fit for the understanding of the weakest and meanest capacity. In which, if any thing shall seem obscure or doubtfull to any man, I could wish my selfe were present to resolve his doubts; for I have endeavoured to make the Rules as brief, short and easie as I could devise.

In my first Book I have intreated concerning vulgar Arithmetick, with new inventions of my owne; in all the first four parts of Arithmetick; *viz.* in *Addition* and *Substraction*, with two several kinds of *Multiplica-*

tion

tion, not charging of the memory, never extant before in any Author that I have read; with four severall kinds of Division, the latter of them bringing the proof, by *Addition* of the figures under the Dividend, without any multiplication, or casting away of nines, according to the accustomed manner.

Again, in the work of Fractions, I have set them forth in plain and perfect figures, after another manner of my owne invention, because the fractionall figures in most books of Arithmetick were so unperfect, that they were scarce to be discerned, and in this manner they will perform all fractionall operations, as well as if they were set out according to the usuall manner. In the end of which Rules I have shewed the reasons and proofs of Fractions by the known parts of Coin.

Thirdly, in the second part of the former book, I have set forth Reduction both in Coin sterling, weights, measures, time, and motion; the Tables whereof are in the first part of the booke, with divers Rules how to bring pence or farthings at the first worke into pounds, shillings, and pence; with divers questions wrought by Reduction; with Progression Arithmeticall, and Geometricall, with examples.

And lastly, I have shewed how to work the Rule of 3 Direct and Converse, both in whole numbers and fractions, after divers severall manners of working; and how to find the Divisor in any question; as also divers waies to work Fellowship, Barter, Exchange, Allegation, Interest, Position, and all other operations Arithmeticall, with examples and brief Rules of every part.

In my second Book of Decimal Arithmetick, I have first described out the parts and use of the Decimall Table, and how to set forth any number given in Decimalls.

Secondly, I have shewed how to work all the severall

parts of Arithmetick, *viz.* *Numeration*, *Addition*, *Subtraction*, *Multiplication*, and *Division* in Decimals; with examples and proofs of every work in the known parts of Coin.

Thirdly, I have handled in as briefe manner as I could, the Rule of 3, Fellowship, Barter, Exchange, and Interest in Decimall Arithmetick, as before in Vulgar, in which you may perceive the great labour that is avoided in vulgar Arithmetick; with divers examples, and proofs of the same.

Lastly, I have added a small Treatise of *Interest* and *Annuities*, with the manner how to calculate Tables, or Breviats at any rate or years purchase given; all which I have drawn into a pocket volume.

And thus hoping of your friendly censure and acceptance of these fruits of my labours, I cease, hoping so have my true endeavours and meaning well taken; desiring a blessing from God upon these my poore labours; wishing all happinesse to the *London* and *Bristoll* Merchant, and to all others, I take my leave.

John Johnson.

10 AP60

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TO THE

The Stationer to the Reader.

THE Curteous Reader may take notice, that whereas the vulgar parts of this Arithmetick were too brief and obscure for Learners in the former Impressions, they are now made more easie by the Addition of many plain examples: So that the meanest Capacities may receive a greater benefit, and the Ingenuous nothing prejudiced by it; also the Additions of many exact Tables of Interest at 10, 8, 7, and 6 per cent. Of Rebate at 8 per cent. Tables of Annuities, Valuation of Leases; Reduction of Weights; the names, Weight and value of English Gold very delightful and profitable. So that it is esteemed by ingenious Accomptants, the most compendious peece of this Subject extant.

I. S.

OHNSONS ARITHMETICK.

CHAP. I.

Of Numeration.

NUmeration is the first part of Arithmetick, which shews how to express and pronounce the true value of any number, by ten figures or characters, where- the tenth is a cifer signifying nothing of self, but being joined with figures increa- h their value, the shape of the ten figures th their single value, is as follow.

, two, three, four, five, six, seven, eight, nine, cifer,
. 2. 3. 4. 5. 6. 7. 8. 9. 0.
w to expresse and pronounce the value of any Number.

Any Number under nine is expressed by

The Table.

The true value of a yearly payment or lease of 20 li. p
cent.
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CHAP. I.

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one, two, three, four, five, six, seven, eight, nine, cifer,
1. 2. 3. 4. 5. 6. 7. 8. 9. 0.

How to expresse and pronounce the value of any Number.

Any Number under nine is expressed by

the single figures above; but to expres a number above nine, obserue these rules following; in a number of above one figure, that figure, next the right hand is the place of unites, and signifies but his own single value, as the figure of 1. signifies but one, the figure of 4. but four, 8. but eight, and so of the rest: but where two or more figures are joined together, the figure in the second place toward the left hand signifies ten times his single value; as for example, the figure of 1 placed on the left side of a figure or cifer, signifieth ten thus, 10. the figure of 3 placed thus 30, thirty; 8 placed thus 80, eighty; as in these examples following;

11 Eleven,	46 forty six,
12 twelf,	52 fifty two,
16 sixteen,	58 fifty eight,
21 twenty one,	66 sixty six,
25 twenty five,	78 seventy eight,
28 twenty eight,	97 ninty seven.

A figure in the third place towards the left hand signifies one hundred, times, his single value; as in these examples,

100 one hundred, 200 two hundred,
442 four hundred forty two,
765 seven hundred sixty five,
999 nine hundred ninty nine, &c.

A figure in the fourth place toward the left hand, signifieth one thousand times his single value, as 1000 one thousand, 8642 eight thousand six hundred forty two. A figure in the fift place signifieth ten thousand times his single value, as 10000. ten thousand; a figure in the sixth place toward the left hand, signifieth one hundred thousand times his single value, as 654732. six hundred fifty four thousand seven hundred thirty two; in the seventh place a figure signifieth his single value in millions, in the eight place ten times his value of millions; in the ninth place one hundred times his single value in milions, in the tenth place, one thousand times his single value in millions; in the eleventh place, ten thousand times his single value in millions, & so infinitely, names may be given for the true value of any figure in any place.

Now to expresse any number consisting of many figures, make a period or distinction with your pen, between every three figures, beginning at the right hand; as in this example, consisting of twelve figures, 123, 456, 789, 101. or a distinction with a stroak thus, 123|456|789|101.

By what hath been already said, the va-

lue of any figure in any of these twelve places, may be understood. Yet for the better pronouncing of any such great number, take notice that the first period of three figures towards the right hand, is the place of units, tens, and hundreds; the second period is the place of units, tens, and hundreds of thousands: the third period is the place of units, tens, & hundreds of Millions: the fourth period is the place of units, tens, and hundreds, of thousands of millions: So if you would pronounce the whole number distinctly read thus; one hundred twenty three thousand four hundred fifty six millions, seven hundred eighty nine thousand one hundred and one. These Rules being observed, there is no number though consisting of many figures, but may be readily expressed and pronounced by the meanest capacity: Numeration hath four parts, Addition, Substraction, Multiplication, and Division, by which all Arithmeticall operations are performed. The next part necessary to be learned is Addition.

CHAP

CHAP. II.

Of Addition.

ADdition is that part of Arithmetick, which serveth to adde or collect together divers Numbers or sums of severall denomination, and to expresse their totall value in one sum: For the understanding thereof alwayes observe to place the numbers or sums of the like degree one under another, that is, place Unite under Unite, tenth under tenth; and in coins, pound under pound, shilling under shilling, and pence under pence: as for example, suppose the number 4235, and 2432 be two numbers given to bee added together, that is, how much will the two numbers make in one? place them one under another and draw a line underneath, as in this example,

4235
2432

Then adde together the two first figures towards the right hand being in the place of units, which is 2 and 5, say, 2 and 5 make 7, which 7 place under the line in the place of unites, thus,

4235
2432

7

Then adde the two next figures under one another, in the place of tenth, which is 3 and 3. say 3 and 3 makes 6, which place under the line in the place of tenth; thus,

4235
2432

67

Then adde together the two next figures which is 4 and 2, they will make 6, which 6 place under the line in his proper place, thus.

4235
2432

669

Then adde the two figures in the fourth and last place, being 2 and 4, which is 6, and place it under the line, as in this example,

4235
2432

6667

So that 4235 and 2432, being added together, makes 6667.

Another Example of more Numbers, if you desire to know what the totall value of these four Numbers added together will amount unto, place them one under another

ther, drawing a line under them, as is here expreſſed,

6723
3456
4575
6723

Then adde the figures in the unites place together being the firſt Row towards the right hand; ſay 3 and 5 is 8, and 6 is 14, and 3 is 17, here you are to obſerve in the adding of any numbers, for ſo many tens there is in the place of unites, ſo many times one muſt adde to the place of tenth, and ſo many tens there is in the place of tenth, ſo many times one muſt be added to the place of hundreds; as in this example here you have 17 in the place of unites, therefore place 7 under the line in the unites place thus,

6723
3456
4575
6723

77

And carry on to be added to the place of tenth, ſaying 1 and 2 is 3, and 7 is 10. and 5 is 15, and 2 is 17, place 7 under the line in its proper place thus,

6723
3456
4575
6723

77

And for the 10 carry 1 to the next place saying, 1 and 7 is 8, and 5 is 13, and 4 is 17, and 7 is 24, place the 4 under the line thus:

6723
3456
4575
6723

477

And for the 20 carry 2 to be added to the next, and proceed, saying 2 and 6 is 8, and 4 is 12, and 3 is 15, and 6 is 21. Now in regard you finished your sums, place your 21 under the line thus:

6723
3456
4575
6723

21477

By which may be perceived that the four numbers being added together, makes 21477. Observing these divers directions you may adde as many Numbers together, as you please,

pleaſe. For the adding of mony, weights, meaſures, time and motion, take the Rules following.

In addition begin to adde your ſums at the right hand with the ſmalleſt numbers or denominations firſt, and gathering of their totall, mark how many of the ſmaller makes one of the next greater; as if your addition be farthings; for every four farthings carry one penny in minde to be added to the numbers in the place of pence, and for every 12 pence put one ſhilling into the number of ſhillings, and for every 20 ſhillings, one pound into the place of pounds; and therefore to know how many of the ſmaller denominations makes one of the next greater, I have here added in this place the ſeverall Tables of Coine ſterling, of Weights, of liquid Meaſures, and dry Meaſures, of long Meaſures, of Time and Motion; which are very neceſſary to be knowne of every Practitioner in Arithmetick, before he proceeds any further in the practice of Arithmetick, being uſed in every particular Rule of Arithmetick more or leſſe.

The Table of Coyne Sterling.

	Pence	*Farth.*
Four farthings makes one penny	1	4
One shilling is	12	48
One pound Sterling is 20 shillings	240	960
One hundred pound Sterling is	24000	96000

Example.

l.	*s.*	*d*	*l.*	*s.*	*d.*	*q*
78597	6. 17.	3	324.	8.	11.	1
80254.	10.	7	222.	17.	3.	1
23547.	11.	0	187.	10.	2.	0
7853.	12.	2	354.	12.	1.	0
248.	00.	0	1856.	00.	2.	0
93.	10.	1	7859.	1.	11.	1
7.	11.	3	3275.	1.	9.	0
Su. 897981.	12.	4.	14079.	12.	3.	3.

The Explanation of these Examples.

In the first example toward the left hand, I begin with farthings, which are 3, which I set downe; then next 9 pence and 11 is 20 and

nd 2 is 22, and 1 makes 23, and 2 makes 25, nd 3 makes 28, and 11 makes 39 pence, or 3 ſhillings 3 pence; I ſet downe the 3 pence, and carry in minde the 3 ſhillings to be added to the place of ſhillings. Then adde the ſeverall ſummes of ſhillings, which are 1.1.2.7. 8, the totall is 19, and the 3 in minde makes 22 ſhillings; ſet down the 2 ſhillings, and keep two tennes to be added to the tennes of ſhillings, which are 3 tens, which makes 5 tens, or 50 ſhillings; ſet downe the odde ten to the two ſhillings, which makes 12 ſhillings, and carry 2 pound for the forty ſhillings to the next place of pounds, which are 5.9.6.4.7.2.4. and the 2 in minde makes 30; leave the 9 under the place of unites, and carry 3 tens in minde, and 7.5.5.5.8.2.2, totall is 37; ſet downe the 7 under the place of tens, and carry 3 in mind for the 30 tens, which is 3 hundred: then 3 in mind, and 2.8.8.3.1.2.3, totall is 30; ſet a cypher, or 0 in the place of hundreds, and carry 3 for the 30 into the place of thouſands; then laſt of all, 3 in mind, and 3,7,1, makes 14 thouſand, and becauſe it is the laſt ſum, you muſt ſet them all downe placing the 4 under the place of thouſands, and the 1 one place more towards the left hand, and then the totall ſum

of

of those particulars will be 14079 pound 12 shillings 3 pence 3 farthings, as appeareth in the example; and in the like manner is the other example to be cast up into one totall: and so I will here end with addition of Coin, and put a severall example of every table for the full *Tables* and perfect understanding of the said Table, which are of great use in all the severall rules of Arithmetick.

The Table of Haberdepoyse weight.

Haberd. the pound.	Oun.	Dra.	Scrup.	Grain.
One pound is	16	128	384	7680
One half pound is	8	64	192	3840
One quarter of a pound is	4	32	96	1920
One eighth of a pound is	2	16	48	960
One fixteenth of a pound is	1	8	24	480

The Hundred.	Pou.	Oun.	Dra.	Scrup.
One hundred is	112	1792	14336	43008
One half hundred is	56	896	7168	21504
One quarter hundred is	28	448	3584	10752
One halfe quarter hundred is	14	224	1792	5376

Examples.

Examples of weights.

C.	qu.	li.	oun.	C.	qu.	li.	oun.	dr.
27.	3.	27.	6.	127.	3.	17.	8.	3.
18.	1.	17.	12.	118.	2.	10.	12.	1.
13.	2.	10.	3.	33.	0.	0.	0.	0.
75.	0.	0.	5.	17.	1.	12.	2.	3.
83.	2.	5.	12.	22.	3.	1.	7.	0.
2	3	2		17.	0.	10.	3.	0.
				2	1	2		
216	2	5	6	336	3	24	00	7

The Explanation.

In the Haberdepoyse weight, 20 graines make one scruple, 3 scruples one dram, 8 drams one ounce, 16 ounces one pound, 112 pound is one hundred of the Haberdepoyse weight, whereby is sold all kinde of Merchandise usuall in this Realme, and therefore in addition of weights Haberdepoyse, for every 3 scruples adde one dram, and for every 8 drams one ounce, and for 16 ounces 1 pound, for 28 pound one quarter of a hundred, and for every four quarters one hundred. First, I begin with the drams in the first example to the right hand, which are 3. 1. 3. totall is 7 drams, which I note down underneath, because they

they are leſſe then one ounce. Secondly, the ounces are 3,7,2,12,8, totall is 32 ounces, or 2 pound, becauſe 16 ounces is one pound; which 2 I ſet under the place of pounds with a light touch of the pen for to remember it the better, and place a Cypher in the place of ounces. Thirdly, the pounds are 2,10,1,12,10,17, totall is 52 pound, which is one quarter of a hundred, and 24 pound, place 24 pound under the place of pounds, and put one quarter, as before, in the place of quarters of hundreds. Fourthly, 1,3,1,2,3, quarters, are 10 quarters, or 2 hundred and 2 quarters, or halfe a hundred; place 2 quarters in the place of quarters, and put over 2 into the place of hundreds for the 8 quarters. Then 2,7,2,7, 3, 8,7, makes 36 hundred, place 6, and carry 3 for the 30: then ſay, 3,1,2,1,3,1, 2. totall is 13, place 3 there, and carry one for the 10, which one in minde, and 1, 1 makes 3, which ſet downe, and the totall is, 336 hundred, 2 quarters, 24 pound, 0 ounces, 7 drams; and ſo the other example is in the ſame manner to be caſt up, and ſo of all other.

The Table of Liquid Measures.

	Pints.
One pound or pint	1
One quart	2
One pottle	4
One Gallon	8
8 Gallons, a Firkin of Ale, Sope, or Herring	64
One Firkin of Beere	72
One Firkin of Salmon, or Eeles	85
2 Firkins, or one Kilderkin of Beer	144
2 Kilderkins, or one Barrell	288
One Tirce of wine	336
63 Gallons one Hogshead of wine	504
2 Hogsheads, or a Pipe or But	1008
2 Pipes, Buts, or a Tunne of wine	2016

The Table of dry Measures.

	Pints
One Pint	1
One quart	2
One Pottle	4
One Gallon	8
One Peck	16
4 Pecks one Bushell Land-Measure	64
5 Pecks one Water-bushell	80
8 Bushels one Quarter	512
4 Quarters one Chaulder	2048
5 Quarters one Waye	2560

The

The Table of Long Measures.

	Inch
Three Barley Cornes in length, one Inch	1
One Foot	12
One Yard, or 3 Foot	36
Or 3 Foot 9 Inches, an English Ell	45
Or 6 Foot one Fadome	72
Or 5 yards and a half, a Pole or Perch	198
Or one Perch in breadth, and 40 long, one Roode	198
Or 4 Perches breadth, and 40 long, an Acre of Land	792
160 Square Perches, is one Acre	792

40 Roddes in length is one Furlong, and 8 Furlongs is an English Mile.

The Table of Time.

	Minute.
One Minute	1
One Hower	60
One Day naturall, or 24 Houres	1440
One Week, or 7 Dayes	10080
One Monsh, or four Weeks, or 28 Dayes	40320
13 Months one Day 6 Hourts, or 365 Dayes, one Year	525960

The

The Table of Motion.

360 Degrees, 21600 Minutes, 1296000 Seconds	12 Signes.
30 Deg. 1800 min. 108000 sec.	1 Signe.
1 Deg. 60 min. 3600 sec.	1 Degree.
1 Min. is 60 sec.	1 Minute.
1 Second	1 Second.
77760000 Thirds make the 12 Signes	1 Third.
4665600000 Fourths make the 12 Signes	1 Fourth.
279936000000 Fifths is 12 signs	1 Fifth.
16796160000000 Sixths is 12 Signs	1 Sixth.

The explanation of these Tables, and the examples following.

First, in the example of Acres, Roods and Perches, for 40 Perches put 1 Rood into the place of Roods, and for every 4 Roods 1 Acre.

Secondly, for every 4 quarters of Inch, take 1 Inch, and for every 12 Inches 1 foot, and for every 3 Foot, one yard.

Thirdly, for 16 pints take one peck, and for every 4 pecks one Bushel, into the place of Bushels.

Fourthly,

Fourthly, for every 8 pints of liquid measure, take one Gallon, and for every 63 Gallons one Hogshead.

Fifthly, in the example of time; for 60 minutes take one houre, and for 24 houres one day, and for 365 dayes, one year.

Sixthly, for 4 nayles take one quarter of a yard, and for 4 quarters one yard, &c.

Lastly, in the example of motion, for 60 thirds, take one second, and for 60 seconds take one minute, and for 60 minutes take one degree, and for 30 degrees take one sign.

And this is the use of these Tables in Addition and Substraction; for looke what you carry over in Addition, that you must borrow in Substraction, I will here adde examples of every kind, leaving the Reader to exercise himselfe by the Rules before taught.

Example.

Acres,	*Rood,*	*Per.*	*Feet,*	*Inch.*	*Quart.*
127.	3.	21	124.	7.	3
246.	1.	12	246.	11.	4
17.	3.	22	134.	7.	2
27.	1.	8	120.	8.	0
37.	0.	17	72.	10.	2
2	2		3	2	
456.	2.	00	699.	9.	3.

Bushel

ssel,	*Pecks,*	*Pints,*	*Yard.*	*Quar.*	*Naile.*
127,	3,	11	127,	2,	3
256,	1,	7	359,	1,	4
345,	0,	0	152,	3,	0
184,	2,	10	16,	0,	0
1	1		1	1	
913.	3.	12	656.	3.	3.

Years,	*dayes,*	*houres,*	*min.*	*seconds.*
356,	245,	16,	35,	20
249,	100,	12,	30,	00
756,	12,	00,	10,	12
140,	27,	30,	25,	02
1618,	00,	20,	00,	00
1	3	1		
3120.	22.	07.	40.	34.

Signs,	*degrees,*	*minutes,*	*seconds,*	*thirds.*
11,	22,	32,	24,	18
8,	19,	17,	20,	12
10,	07,	00,	08,	15
2,	17,	35,	50,	59
3,	29,	30,	12,	00
3	1	1	1	
37.	05.	55.	55.	44.

The proofe of Addition.

The proof of Addition is made by Subſtra-

ction;

ction; for if you substract the numbe which you added from the totall of the A dition, there will remaine nothing if t work be truly done.

Example.

	l.	s.	d.	q.
	378567.	19.	10.	1.
	240023.	10.	2.	0.
	854326.	07.	1.	0.
	785634.	13.	3.	2.
	320500.	00.	11.	1.
Totall,	2579052.	11.	4.	0.

First, adde together the greatest summes in value in the place of hundred thousands, which makes 23, which take from 25, and there will remaine 2, then the figures in the fifth place, 26 taken from 27, there will remaine 1. Thirdly, the figures in the place of thousands, makes 17, which taken from 19 leaves 2, then 19 in the place of hundreds taken from 20, leaves 1: and againe, 13 in the place of tennes from 15, leaves 2: and lastly, 20 in the place of unites from 22 pound, leaves 2 pound: then 49 shillings from 2 pound 11 shillings, leaves 2 shillings:

ngs: also 2 shillings 3 pence in the place of nce, from 2 shillings 4 pence, leaves 1: and t of all, 4 farthings from 1 penny, leaves othing, which proves the worke to bee uly wrought.

	l.	*s.*	*d.*	*q.*
The Totall.	2579052.	11	4	0.
	2122122.	2.	2.	0.

The second proof of Addition.

Cut off the uppermost numbers with a dash of the pen, and adde the remainer into one Totall; & then subtract that sum from the whole Totall, and the remainer will be the numbers which you cut off, if the work be true, else not.

Example.

	378567,	19,	10,	1.	
	240023,	10,	2,	0	
	854326,	7,	1,	0	
	785634,	13,	3,	2	
	320500,	00,	11,	1	
Total	2579052,	11,	4,	0	*of all*
Subt.	2200484,	11,	5,	3	*the sums*
The	378567,	19,	10,	1	*Proof*

And so much shall suffice to have spoken of Addition, and the proof thereof.

Questions

Queſtions of Addition.

What number is that, to the which if you doe adde 45, the totall will be 357

Anſwer. Subtract 45 from 357, remain 312.

Example.

357
45
312

What three numbers are thoſe, to which if you adde 27, 36, and 45, their product ſhall be equall, and the ſum ariſing ſhall be 120.

Proof.

120	120	120	93
27	36	45	27
93	84	75	120

What number is that, to the which if you doe adde 354 pound, 7 ſhillings, 9 pence, the totall will be 512 pound, 15 ſhillings, 0 penny? Anſwer: Subtract 354 pound, 7 ſhillings, 9 pence, from 512 pound, 15 ſhillings, 0 penny, and the remainder will be 158 pound, 7 ſhillings, 3 pence, which is the number that you do ſeek.

Example.	*l.*	*s.*	*s.*
	512.	15.	0.
	354.	7.	9.
	158.	7.	3.

CHAP. III.

Of Substraction.

SUbstraction is that of Arithmetick which serveth to deduct or take one summe or number, from another, the lesse from the greater, and produce what there remains: as suppose there bee delivered or received 6342 pounds, Sheep, Oxen, (or what you please to imagin) and have disposed of them 2131, how many will there remain? place the greater number from which you would substract, and then place the lesser number to be substracted under it, drawing a line with your pen; as in this example.

6342
2131

Then take the first figure towards the right in the number to be substracted from the figure over it, and place what remains under the line; that is, take 1 from 2, and there

there remains 1, which one place thus,

6342
2131

1

Then take the next in the place of tenth, and place the remainder under the line even with the reſt, that is, take 3 from 4. and the remainder is 1, which 1 place under the line thus,

6342
2131

11

Then come to the third place, and take 1 from 3 and there remains 2, which place under the line even with the reſt, thus:

6342
2131

211

Then take the fourth from the fourth, which is 2 from 6, and there remains 4, which place under the line thus;

6342
2131

4211

By which you may perceive that 2131, being taken from 6342 there remains 4211, the proof of Subſtraction is by Addition, that

that is, adde what remains to the number subſtracted, and if they both make your firſt number it is right, if not, it is wrong, as in the former example, adde 4211, the remain to 2131, they make 6342. thus your firſt Number,

6342
2131
4211
6342

Another Example of ſubſtraction I would take 1648 from 2537 and know what remains, place them as in the former example, the greater number firſt and the leſſer under it, thus,

2537
1648

Then take the lower number from the upper and place the remainder under the line, that is, take 8 from 7 you cannot, therefore borrow ten from the place of tenth, which make 17, then take 8 from 17 and there remaines 9, which 9 place thus,

2537
1648
9

Obſerve that as in addition for every ten you had in the firſt place you were to add 1, to the ſecond place, ſo on the contrary in Subſtraction for every ten you want, in the firſt place, you are to take from the ſecond; ſo here the firſt you borrow from the ſecond place, which is the figure of 3 there is but 2 remaine; then proceed to the ſecond figure and take 4 from 2 the which you cannot, therefore as in the former borrow from the next, and take 4 from 12 and there remaines 8, which 8 place thus,

2537
1648

89

Then take 6 from 4 that you cannot, but take 6 from 14 and there remaines 8, which place under the line thus,

2537
1648

889

Then take 1 from 1 and there remaines nothing, by which you may perceive that 1648 taken from 2537 there remaines 889, the which you may prove by adding (as was directed in the former example)

2537

2537
1648

889

2537

Here followeth divers examples with their proofs.

A third Example.

Borrowed	678912
Paid	489345
Remain	189567
Proofe	678912

A fourth Example.

Borrowed	1040603090
Paid	10690842
Remaine	1029912248
Proofe	1040603090

A fifth Example.

Delivered	1000000000
Received	987654321
Remain	012345679
Proofe	1000000000.

For the Substracting of Money or Coyns of Weights, Time, and Motion, observe the following rules.

C Place

Place your great number, from which the Subſtraction is to be made in the uppermoſt part, and the number to be ſubſtracted, or deducted right underneath every figure under his like kinde, or denomination, *viz.* pounds under pounds, ſhillings under ſhillings, and pence under pence, &c. in this manner.

	l.	*s.*	*d.*	*q.*
Lent	7756.	13.	10.	1.
Paid	3949.	17.	11.	2.
Reſt.	3806.	15.	10.	3.
Proo.	7756.	13.	10.	1.

Then begin your ſubſtraction at the left hand, at the ſmalleſt numbers; but if the loweſt figure of the undermoſt numbers bee the greateſt, that it cannot be abated out of the number above it, then adde one of your next greater denomination, and make your ſubſtraction from both, noting the remainer: as if you have 10 pence to take from 7 pence, adde one ſhilling, or 12 pence, unto 7 pence, that maketh 19 pence; then take 10 pence from 19 pence, and there will remaine 9 pence, which note down under the 10 pence: and becauſe you did borrow one ſhilling, therefore in the number of ſhillings you ſhall take away one more than it is, in the

next place of ſhillings: and this rule is generall in Coyn, Meaſure, Time, Motion, or any thing elſe whatſoever.

1 Example of Subſtraction of Coyn.

	l.	*s.*	*d.*	*q.*
Lent	789786.	17.	11.	3.
Paid	692583.	19.	10.	1.
Reſt	97202	18.	1.	2.
Prou.	789789.	17.	11.	3.

The Explanation of theſe Examples.

In the firſt example of Coyne, begin your Subſtraction at the right hand, ſaying, 1 farthing from 3 farthings, leaves 2 farthings, which note downe under the 1 farthing. Then 10 pence from 11 pence, leaves 1 penny. Thirdly, 19 ſhillings from 17 ſhillings you cannot have, therefore take one pound, or 20 ſhillings, and adde to 17 ſhillings, ſaying; 19 ſhillings from 37 ſhillings, reſts 18 ſhillings, which note downe. Then 1 that you borrowed, and 3 pound, is 4 pound from 6 pound, leaves 2 pound to ſet downe under 3. Then 8 from 8 leaves nothing, place there a Cypher, or 0 under 8. Then 5 from 7 reſts 2, then 2 from 9 leaves 7, which alſo note againe, 9 from 8 cannot be taken,

then make it 10 more, and say 9 from 18 leaves 9, which set downe: and last of all 1 borrowed and 6 is 7, from 7 leaves nothing, and the worke is ended, and the remainder will be 97202 pound 18 shillings 1 penny 2 farthings, as appeareth in the example before going.

2 *Example, of Weights.*

	C.	q.	li.	oun.
Lent	127.	3.	27.	10.
Paid	38.	2.	24.	15.
Rest	89.	1.	2.	11.
Proof	127.	3.	27.	10.

The exposition of the second Example.

First take 15 ounces from 10, which cannot be, then adde 1 pound, or 16 ounces to 10, makes 26, then say, 15 from 26 leaves 11 ounces, which note down: then 1 borrowed, and 24 is 25, from 27 pound leaves 2 pound remaining; then 2 quarters from 3 quarters, leaves 1 quarter remaining; then 8 from 7 cannot be, therefore take 8 from 17, rest 9, which note down: then 1 borrowed & 3 makes 4, from 12 rests 8, and the work is done, and

the

the remain is 89 hundred 1 quarter 2 pound 11 ounces.

3. *Example of Time.*

	Yeares,	*dayes,*	*houres,*	*minutes.*
Tot.	1618.	340.	20.	56.
Ded.	1581.	122.	15.	59.
Reſt	0037.	218.	04.	57.
Pro.	1618.	340.	20.	56.

4. *Example of Motion.*

	Sig.	*Deg.*	*Min.*	*Sec.*	*Thirds.*
Tot.	11.	22.	36.	52.	40.
Subt.	7.	29.	51.	42.	56.
Reſt.	3.	22.	45.	09.	44.
Proo.	11.	22.	36.	52.	40.

3. *Example.*

Firſt, take 59 minutes, from 56 minutes cannot be, but then take 59 minutes from 60 minutes, or 1 houre, and there will remain 1 minute, which adde to 56 minutes, and

that will make 57 minutes, which note downe in the place of minutes: then 1 borrowed and 15 houres makes 16 houres, which taken from 20 houres leaves 4, which note under the 15, and then 2 dayes from 0 cannot be, but 2 from 10, and there will remaine 8, which note down: then 1 borrowed and 2 makes 3, from 4 leaves 1; alſo 1 from 3 leaves 2: laſtly, 1 from 8 leaves 7, and 8 from 11 leaves 3; then 1 borrowed and 15 makes 16, from 16 leaves nothing, and the remainder will be 37 yeares 218 dayes 4 hours 57 minutes; the like is done in the other example of Motion, and therefore here needleſſe to be rehearſed.

To ſubſtract from a Vnite.

Set downe with your pen a Unite in any place, adding Cyphers unto it, and the ſeveral numbers which you wil ſubſtract from it of pounds, ſhillings and pence write underneath: then note what each ſeverall number of your loweſt numbers doth want of 9 unto the place of Unites, and ſet that right under for the remainer: and laſtly, note what your ſhillings and pence doth want of 20 ſhillings, and ſet that downe for your remainer, and the worke is ended.

Example.

Example.

	l.	s.	d.
Lent	1000000.	00.	00.
Paid	232864.	17.	03.
Reſt	767135.	2.	9.
Proof	1000000.	00.	0.

The Proofe of Subſtraction.

The ſureſt proof of Subſtraction is made by Addition; for if you adde the numbers remaining unto the totall of the numbers deducted, they wil return your former ſum, if the worke be truly wrought, as will appeare in the proofe of all the ſeverall examples before going; and therefore here againe in this place needleſſe to be rehearſed. Onely I will adde one for examples ſake.

In the laſt example, the numbers which did remaine, were 767135 pound 2 ſhillings 9 pence, and the numbers deducted, 232864 pound 17 ſhillings 3 pence, theſe 2 numbers added together, ought to make a unite in the ſeventh place; wherefore I adde 9 pence to 3 pence, makes 1 ſhilling; and 1 ſhilling to 17 ſhillings, makes 18 ſhillings, and 2

ſhillings make 20 ſhillings; then 1 and 4 is 5, and 5 is 10, which is one in the next place; then 1 and 3 and 6 is 10; and 1.1.8. makes 10, and 1.7.2. makes 10, and 1.6.3. is 10. and laſtly, 1.7.2. makes 10. or one unite.

CHAP. IV.

Of Multiplication.

MUltiplication is that part of Arithmetick, by which is multiplyed one Number by another, to the end their product may be knowne. Multiplication is a ſpeedy way of Addition, as to know what 3 times 253 is, or 8 times 9; it is not to put downe 252 3 times, or 8 times 9 one under another, and ſo caſt them up, but to multiply 252 by 3, as ſhall be ſhewen hereafter.

In Multiplication there is three parts, the Multiplicand, the Multiplicator, and the Product; the Multiplicand is the number given to be multiplied, the Multiplicator is that number by which you multiply, the Product is that which is produced by the

the multiplication; so if you multiply 5 by 4 the Product will be 20, for 4 times 5 is 20, here the 5 is the Multiplicand, 4 the Multiplicator, and 20 the product.

Multiplication is either single or compound, single Multiplication is when the Multiplicand and Multiplicator consist of one single figure.

To know the Multiplication of any single figure, here followeth a perfect Table.

The Table of Multiplication.

1	2	3	4	5	6	7	8	9
2	4	6	8	10	12	14	16	18
3	6	9	12	15	18	21	24	27
4	8	12	16	20	24	28	32	36
5	10	15	20	25	30	35	40	45
6	12	18	24	30	36	42	48	54
7	14	21	28	35	42	49	56	63
8	16	24	32	40	48	56	64	72
9	18	27	36	45	54	63	72	81

The use of this Table is, if you desire to know what the Product of any number under 9 being multiplyed by any single figure, first find one of your number in the uppermost

uppermoſt row, and the other in the row downward towards your left hand, and in the Angle where the 2 figures meet you have the Product, as for Example, 8 multiplyed by 6 you will find to be 48. 6 by 6 is 36, 6 by 7 is 42, and ſo of the reſt; it will bee very neceſſary for thoſe that deſire to be expert in Arithmetick to learne this Table by heart, which may eaſily be done, moſt of it being naturall to the meaneſt capacity, if they can but read, as who knows not that 3 times 3 is 9, 3 times 4 is 12, 4 times 5 20, 4 times 6 24 and the like?

In compounded Multiplication, that is, when you would multiply any number conſiſting of many figures, as if you multiply 3421 by 2, that is, how much is 2 times 3421, place your Multiplicand firſt, and then place your Multiplicator under it, drawing a line under them with your pen thus,

3421
2

Then proceed to the Multiplication and ſay 2 times one is 2, which 2 place under thus,

3421
2
2

Then

Then multiply the second figure, say 2 times 2 is 4 which place under thus,

3421
2
42

Then multiply the third, which is 4, say 2 times 4 is 8, which place under the line thus,

3421
2
842

Then multiply the last, 2 times 3 is 6, which 6 place under thus,

3421
2
6842

By which you may perceive that 3421 multiplyed by 2, makes the product to be 6842.

The second Example in which the multiplier consists of two figures, if you multiply 4562, by 24, that is, how much is 24 times 4562, place them as formerly directed, your greater number first, and the lesser underneath, drawing a line under them thus,

4562
24

And

And multiply the upper number by the first figure of the multiplicator, say 4 times 2 is 8, set 8 under the line and multiply the next, 4 times 6 is 24, set downe 4 and carry 2 to be added to the next, say 4 times 5 is 20, and 2 is 22, set downe 2 and carry 2 to be added to the next, then say 4 times 4 is 16, and 2 is 18, which 18 put in its proper place, and cancell the figure of 4, then it stands thus,

4562
24
18248

Then multiply the Multiplicand, or the upper number by the second figure of the Multiplier being 2, say 2 times 2 is 4, and 2 times 6 is 12, set downe 2 and carry 1 to the next, 2 times 5 is 10, and 1 is 11, set down 1 and carry 1 to the next, 2 times 4 is 8, and 1 is 9, set downe 9, the which being done, cancell the second figure, and it stands thus;

4562
24
18248
9124

Then adde your two numbers together, it will by the Product, which is 109488 being the Product of 4562 multiplyed by 24.

Multiplicand

Multiplicand 4562
Multiplicator 29

Product. 18248
9124

Totalis 109488

The third Example, where the Multiplier consists of three figures.

87968 *Multiplicand.*
987 *Multiplier.*

First begin (as hath been formerly shewed, your multiplication at the right hand, saying 7 times 8 makes 59, place 6 under the 7, and keep 5 in minde to be added to the Product of the Multiplication of 7 by 6, saying 7 by 6 makes 42, and 5 in minde is 47; set 7 downe under the 6, and keep 4 in minde: then 7 by 9 is 63, and 4 makes 67; set 7 downe, and keep 6 in minde: then 7 by 7 is 49, and 6 is 55, place 5 and keepe 5 in minde: lastly, 7 by 8 is 56, and 5 is 61, which set downe the 1 first, and the 6 one place more towards the right hand; and so the multiplication by the first figure 7 is done, then cancell the 7 of your multiplyer, and your work will stand, as in this example.

87968

87968
987

615776

Secondly, begin with 8, the ſecond figure of your multiplier, ſaying 8 times 8 is 64, place the 4 under the ſaid 8, and keep the 6 in mind: then 8 by 6 is 48, and 6 makes 54: ſet downe 4 in the next place, and keep 5 in mind: then 8 by 9 is 72, and 5 makes 77; ſet down 7, and keep 7 in minde: then 8 by 7 is 56, and 7 makes 63; ſet downe 3, and keep 6. Laſtly, 8 by 8 is 64, and 6 makes 70, ſet the 0 firſt, and the 7 one place more towards the left hand, and cancell the 8 of your multiplier, and the work will ſtand thus,

87968
987

615776
703744

Thirdly, begin with 9, the laſt figure of your multiplyer, ſaying 9 by 8 is 72, place the 2 under the ſaid 9, and keep 7: then 9 by 6 is 54, and 7 is 61; place 1, and keep 6: then 9 by 9 is 81, and 6 is 87; place 7, and keep 8: then 9 by 7 is 62, and 8 is 71: place 1, and keep 7: laſt of all, 9 by 8 is 72, and 7

is 79, place the 9 first, and the 7 one place more towards the right hand, and the whole work is ended, then gather the totall by addition.

87968 *multiplicand.*
987 *multiplier.*

615776
703744
791712
86824416 *Product.*

Fourth Example with Cyphers.

70328650I *multiplicand.*
32057 *multiplier.*

4923005507
3516432505
140657320020
2109859503
2254525362557 *product.*

The Exposition of this Example.

First, 7 by 1 is 7, which note downe: then 7 by 0 is nothing, set down a 0 in that place: and next 7 by 5 is 35, set 5, and carry 3; then 7 by 6 is 42, and 3 is 45, place 5, and carry 4: then 7 by 8 is 56, and 4 is 60, set down a 0, and carry 6 againe: 7 by 2 is 14, and 6 makes

makes 20, ſet downe a 0 and carry 2: then 7 by 3 is 21, and 2 makes 23, place 3, and carry 2: then 7 by 0 is 0, leave the 2 in the place: then laſtly, 7 by 7 is 49, being the laſt number, ſet down all the 9 under 7, and the 4 one place more to the left hand, and the work will then ſtand thus.

703286501
32057
4923005507

Secondly, cancell 7, and then ſay, 5 by 1 makes 5, place that 5 under the 0; and then 5 by 0 is 0, place a 0 under the 5 in the next place; and then 5 by 5 is 25, ſet down 5, and carry 2: then 5 by 6 is 30, and 2 makes 32, ſet downe 2 and carry 3: then 5 by 8 is 40, and 3 makes 43, place 3 and carry 4: alſo 5 by 2 is 10, and 4 makes 14, ſet downe 4, and carry 1: then 5 by 3 is 15, and 1 makes 16, ſet downe 6, and carry 1: then 5 by 0 is 0, ſet down the 1 there: laſt of all, 5 by 7 is 35, ſet them all downe, and the work will then ſtand thus,

703286501
32057
4923005507
3516432505

Thirdly, cancell the 5, and then ſay 0 by 1 is

is 0, place 0 under the 0 of your multiplier, and then proceed to the next figure of your multiplier, which is 2, saying 2 by 1 is 2, place the 2 under the said 2 of your multiplier: then 2 by 0 is 0, which set downe: then 2 by 5, makes 10, set downe a 0, and carry 1: then 2 by 6 is 12, and 1 is 13, set downe 3, and carry 1: also 2 by 8 is 16, and 1 is 17, set downe 7, and carry 1: also 2 by 2 is 4, and 1 makes 5, which set down: againe, 2 by 3 is 6, which set down: lastly, by 7 is 14, which set downe, and the worke will stand as in this example.

703286501
32057

46230055O7
3516432505
14065730020

Fourthly, cancell the 2, and say, 3 by 1 is 3, which place right under the said 3: then 3 by 0 is 0, and work in al respects as before, and the work being ended will stand thus.

Multiplicand 703286501
Multiplier 32057

49230055O7
3516432505
14065730020
2109859503

Product. 22545255362557 I

I will here adde some few examples to be wrought by the penne, without any troubling of the memory with bearing ought in mind.

1. *Example.*

87968 *multiplicand.*
987 *multiplier.*

46456
56932
57464
64628
68572
72314

Product. 86824416

2. *Example.*

79648039 *multiplicand.*
8976 *multiplier.*

53240154
42464808
42250263
48328601
85370281
63146207
74360372
56282404

714920798. 064 *Product.*

The

The explanation of the worke by the pen, without charging the Memory.

The first Example 87968
987

First, I multiply all the figures of my multiplicand by 7, the lowest figure of my multiplier, saying, 7 by 8 is 56, put 6 under the 7, and 5 under the 8: then 7 by 6 is 42, leave the 2 under 5 last placed, and set the 4 one place more towards the left hand under the 9: then 7 by 9 is 63, leave 3 under the 4 last placed, and set 6 one place more to the left hand under 7: then 7 by 7 is 49, leave 9 under the 6 last placed, and the 4, set one place more to the left hand under the 8: lastly, 7 by 8, makes 56, leave 6 under the 4, and place 5 one space more to the left hand, as before, then cancell 7 of your multiplier, and the multiplication by the first figure is ended and the work will stand thus.

Example. 87968
987

46456
56932

Then for the second worke, say 8 by 8 is 64, place 4 under the said 8, and put 6 under the next figure 3: then 8 by 6 makes 48, leave 8 under 6, and put 4 under the next 9:

and

and so working in all respects as at the first, and your second work will stand thus, as in this example.

87968
987

46456
56932
57464
64628

Lastly, cancel 8 your multiplier, and then multiply by 9, as is before taught, placing the first figure of your product under the figure multiplying, & the work being ended it will stand thus: and lastly, gathering the totall by addition, it is 86824416; as in this example.

87968
987

46456
56932
57464
64628
68572
72314

Product. 86824416

There is no difficulty in this kinde of working, but onely when there falls a 0 in the

the multiplicand, or multiplier; for if there be a cypher, then you must fill up the places as you work, either with pricks or cyphers, as if you had figures to set in their places, and the rest of your worke is, as before is taught in the third example; but I will here adde one example, having all the difficulties that may happen, for the better understanding hereof.

Example.

70921034
1293

02000012
21076309
08100236
63018907
01000008
14084206
70921034

Product. 91700896962

Example.

Example.

```
80073902147368
        179852
-------------------
  00101000010116
 16004680428462
 000314010231340
 40005550050550
 00527010352464
 64006420682648
 00628010362572
 72003710896374
 00426010242564
 56009130478912
 80073902147368
-------------------
 14401451449008429536
```

How to multiply and to bring the Product in the last line.

Place you numbers right one under the other, as in the common way; then make a right line somewhat distant from the first numbers with your pen, as in the example following.

```
  87968
    987
  5648
-------
 615776
```

Then beginne and say, 7 by 8 is 56, place the

the 6 under the line under the 7, and the 5 above the line in a smaller figure in the next place towards the left hand: then 7 by 6 is 42, and the five above the line makes 47, leave 7 under the 8, and set the 4 againe above the line: then 7 by 9 is 63, and the 4 above the line makes 67, place 7 there, and set the 6 in the next place above the line, then 7 by 7 is 49, and 6 above the line makes 55, leave 5 there, and put 5 again over the line: lastly 7 by 8 make 56, and the 5 last placed makes 61, place that whole summe under the line, and that work will stand as above in the example.

Secondly, draw a line again a little distant, as before, from the last product, as in the example following.

Example.

```
   87968
     987
    5645
  ------
   61577|6
   68670|
  ------
  765321
```

Then say 8 by 8 is 64, and 7 makes 71, place 1 under the 7, and set 7 above the line: then 8 by 6 is 48, and the two seavens between lines makes 62, place 2 under the 7, and set 6 again over the line: then 8 by 9

is 72, and 6 makes 78, and 5 makes 83, place 3 under the line, and 8 above the line; then 8 by 7 is 56, and 8 makes 64, and 1 makes 65, place 5 under the line, and set 6 above: lastly 8 by 8 is 64, and 6 makes 70, and 6 makes 76, place them both down; and the work will stand as above in the example.

Thirdly, draw a line again, as before, a little distance from the last product, as in the example.

Example.

87968
987
5645
61577 6
68670
765321
7967
868244 16 *Product.*

Thirdly, say 9 by 8 is 72, and 2 makes 74, place 4, and put 7 over the line: then 9 by 6 is 54, and 10 makes 64, place 4 under the line, and put 6 above: then 9 by 9 is 81, and 11 above makes 92, leave 2 under the line, and 9 over the line: then 9 by 8 is 63, and 15 makes 78, leave 8 under the line, and 7 above: lastly, 9 by 8 is 72, and 14 makes 86, place

8

place them both under the line, and then bring down the two fingers which are cut off by two right down lines, which are 4 and 6, and the work is ended, and the work will stand, as appeareth in the example above, and the totall Product is in the last line, 86824416; and this doth not charge the memory, for all the figures are set down in view, and to be seen at the first sight, and this is the second kind of multiplication, without charging of the memory.

```
        79648039
            8976
        5324025
      47788833|4
      76461260|
     60532509|6
     86470390|
    77737480|0
    85470379|
   714921798064
```

CHAP. V.

Of Division.

Division is that by which we wee know how many times one Number is contained in another, to the end we may find

the Quotient as in Multiplication. So in Division are three parts: the Divident, the Divisor and the Quotient, the Dividend is the number given to be divided, the Divisor is the number by which wee divide, the Quotient is the number produced by the Division; if 24 were given to be divided by 6, the number produced would be 4, because 4 times six is found in 24: here 24 is the Dividend 6 the Divisor, and 4 the quotient. As Substraction is but the undoing of that which is done by Addition; so Division is the undoing of what is done by Multiplication; for if you multiply 6 by 4, the product will be 24: so if you divide 24 by 6, 4 will bee the quotient: for the working of Division you must place your dividend or number to be divided first, then under it, place your divisor or number by which you are to divide; as suppose you would divide 646 into 2 parts, set your number, thus: *Dividend* 646 (*Quotient*

Divisor 2

First you must seek how may times 2 you have in 6, you will find 3 times, which place at the right hand of the distinction in a line with the divident, and then with your pen cancell your 2 and 6 thus,

646 (3

Then set the Divisor under the next figure of the Dividend toward the right hand thus,

646 (3
21

And seek how many times you have 2 in 4, which is 2 times, that you must place on the right hand of the quotient of 6, and cancell your 2 and 4, then your worke will stand thus,

646 32
22

Then remove your Divisor to the next figure of the Dividend under 6 thus,

646 (32
222

And seek how many times 2 there is in 6, which is 3, the 3 you must place at the right of the Quotient, and cancell your 2 and 6, as here you see,

646 (323
222

So you will find that there is 2 times 323 in 646. The like may be done in the division of other numbers. Another example of division with 1 figure.

I would divide 65490 pound amongst 5 men; place your numbers thus,

Example.

Quotient.

Dividend. 65490 (

Divisor. 5

First, I seek how oft 5 is in 6, this I may have but once; then put 1 in the quotient beyond the crooked line, and take 5 out of 6, and there will rest 1, set that over 6, and then remove your divisor one place more to the right hand, and then seek how many times 5 may be had in 15, and the answer is, thrice; therefore place 3 in the quotient, and by it multiply your divisor 5, makes 15 which taken out of 15 leaves nothing, remove your divisor, and seek how oft you may have 5 in the 4 over it, but you cannot have it once; wherefore put 0 in the quotient, and remove your divisor, and seek how many times you may have 5 in the figures over and behind it, which are 49, and you may have it nine times, put 9 in the quotient and by it multiply your divisor 5, makes 45, which taken from 49 leaves 4, which place above the 9. And lastly, remove again your Divisor 5 under the 0, and seek how many

5 is

5 is in 40, and you shall find it 8 times, place 8 in the quotient, and by it multiply 5, makes 40, which taken from 40, leaves nothing remaining, and the work is ended, and will stand thus, as in the example, and I find, if I divide 65490 pound amongst 5 men, every man shall have for his part 13098,

1 4
65490 (13098 *quotient.*
59095

Another example with one figure, suppose there is 398 pound to be divided equally among 6 men, how much will one part be? Place first your dividens, and in regard you cannot take 6 out of 3, you must set your divisor under the second figure, that is, under 9 thus,

398 (
6

And seek how many times 6 you have in 39, 6 times 6 is 36, take 36 from 39, there remaines 3, place the 3 over the 9, and the 6 in the quotient, and cancell the 39 and the 6, thus,

3
398 (6
6

Then remove your Divisor to the next place under 8, and seek how many times 6

you have in 38, you will finde 6 times and 2 over, place the 2 over the 8, and the 6 in the quotient, and cancell the 38 and 6, thus,

```
  2(2
  3 9 8 (66
    6 6
```

So there will be 66 pounds to each man and 2 pound over, that also divided into 6 parts, is 6 shilling 8 pence, in all, 66 pound 6 shillings 8 pence. To prove it, multiply the quotient by the Divisor, adde the 2 pound over it will make your dividend, that is 6 times 6 is 36 and 2 is 38, and 6 times 6 is 36 and 3 is 39.

And this is the order of Division for one figure: but if your Divisor doe consist of more figures then one, then you must take the first figure of your Divisor no oftner out of the Dividend, then you can also take every severall figure of your Divisor, out of the same figures of the Dividend standing above them: as for example.

If you would divide 86824416 by 987, which was one of the produsts of the multiplications in the rules before going, for a triall of your former worke, then place your numbers, as in the example following.

Example

Example.

8682416 (8
987

Then I seek how oft I may have 9 in 86; I finde I may have it 9 times; but if I consider the next figure 8 of my Divisor, I cannot have also 9 times 8 out of the numbers remaining; if I take 9 times 9, which is 81, out of 86, there will remain but 5; and then 9 times 8, the next figure, of my divisor, makes 72, which cannot be taken out of 58 which will remaine: therefore I place 8 in the quotient, and by that I multiply all the figures of my Divisor, 987 makes 7896, which taken from 8682, leaves 786 above them: and the work will stand thus.

786
8682416 (8
987
7896

Secondly, I remove my Divisor 987 one place nearer the right hand, and then I seek how oft I may have 9 in 78, which I see I can have but 7 times, so I put 7 in the quotient, and by that 7, I multiply my Divisor 987, makes 6909, which taken from 7864, the numbers above them there will remaine 955, and the worke will stand thus,

Example.

95
7885
88824116 (87
9877
78969
698
90

Thirdly, againe I remove my divisor 987 one place nearer the right hand, and seeke how many times I may have 9 in 95, and I find I may have it 9 times, which 9 I set into the quotient, and by it multiply 987 makes 8883, which taken from 9554 leaves 671, and the work will stand thus,

Example.

67
959
78852
88824116 (879
98777
789693
698
68

Fourthly, I remove my Divisor againe, and seek how oft I may have 9 in 67, and I see I can have it but 6 times, then I put 6 in the quotient, and by it multiply 987, makes 5922, which taken from 6711, leaves 789, and the worke will stand in the example following.

Example.

Example.

67
9558
786519
86824416 (8796
987777
7896932
8988
892
59

Lastly, I remove my Divisor againe, and seek how oft I may have 9 in 78, and I finde I may have it 8 times, which 8 I put into the quotient, and by it I multiply my Divisor 987 makes 7896, equall unto the numbers above; and so being taken away, leaves nothing remaining, and proves the multiplication to be truly wrought, as appeareth in the example following.

Example.

67
9558
786519
86824416 (87968
9877777
78969327
898886
8929
587
78

The

The third example of Division.

The second kinde of Division is this: first place your dividend and divisor, as in the former Examples, and then having found out the figure of your quotient, begin with the least figure of your divisor towards the right hand first, and multiply that by the figure of the quotient found, and then subtract the sum of the multiplication of that figure from the figure above the same, if it exceed not 9; but if the product be above 9 then for every 10 beare 1 in mind to be added to the product of the multiplication of the second figure of your Divisor by the quotient; and so in all respects worke for every other figure, and you shall need make no more figures above your Dividend then necessity shall require. As for example.

I would divide the product of the multiplication in the former Chapter of 79648039 by 8976, which was found to be as followeth, *viz.* 714920798064 by 8976: first I place my Dividend and Divisor as followeth.

		Quotient
Dividen.	714920798064	(7
Divisor.	8976.	

Then first I seeke how often I may have 8 in 71, I finde by tryall I can have it but 7 time

times: then having placed 7 in the quotient, I first multiply 6, the least or smallest figure in value by 7, makes 42: then I say 42 from 42 rests 0, and carry 4 for the 40 in mind: then I cancell the 2 over the 6, and place a 0 in the room over it. Secondly, I say, 7 by 7 is 49, and 4 in minde makes 53, from 59 leaves 6, and carry 5; cancell the 9 and place 6 over it. Thirdly, 7 by 9 is 63, and 5 in minde is 68, from 74 leaues 6, and carry 7, cancell the 4, and place 6 above it: also 7 by 8 is 56, and 7 makes 63, which taken from 71 leaues 8 remaining, which 8 place over the 1, and cancell the 71, and the first work will stand thus,

8660

71492079 8064 (7

8976

Secondly, I remove my Diuisor 8976, and seeke how many times I may haue 8 in 86, I finde 9 times: then I multiply 6 by 9 placed in the quotient, makes 54, which taken from 60 leaues 6: place 6 above the first 0, and carry 6 for the 60: then say 9 by 7 is 63, and 6 in minde makes 69, from 70 leaues 1, and carry 7 in minde, cancell the 0 over the 7, and place the one over the 0. Againe 9 by 9 is 81, and 7 in minde is 88, which taken from 96 leaues 8 to be placed above the first

6, and carry 9 in minde: lastly 9 by 8 is 72, and 9 makes 81, which taken from 86, leaves 5 to be placed above the 6, and the worke will stand as followeth.

Example,

```
        581
       86606
    714920798064 (79
       89766
        897
```

Thirdly, again I remove my Divisor, and seeke how many times 8 is in 58, and I finde I can have it but 6 times, which I place in the quotient: then I say, 6 by 6 makes 36, from 37 leaves 1 above 7, and carry 3: then 6 by 7 is 42, and 3 is 45, from 46 leaves 1, above the 6, and carry 4: againe, 6 by 9 is 54, and 4 makes 58, from 61 leaves 3 above the 1, and carry 6. Lastly, 6 by 8 is 48, and 6 makes 54, from 58 leaves 4, and the work stands thus, as in the example,

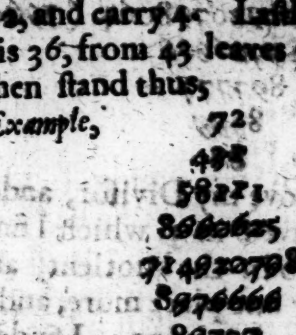
```
        43
       5811
       866061
    714920798064 (769
       897666
        8977
         89
```

Fourthly, I remove my Divisor, and seek how oft I may have 8 in 43, and I finde but

4 times

4 times, I place 4 in the quotient. Then 4 by 6 makes 24, from 29 leaves 5, and carry 2, set 5 over the 9; then 4 by 7 is 28, and 2 makes 30, from 31 leaves 1, and carry 3. Again, 4 by 9 is 36, and 3 makes 39, from 41 leaves 2, and carry 4. Lastly, 4 by 8 is 32, and 4 is 36, from 43 leaves 7, and the work will then stand thus;

Example,



Fifthly, I remove my Divisor, and seeke how oft I may have 8 in 72: I find 8 times, which placed in the quotient, I multiply 6 by 8 makes 48, from 48 leaves 0, and carry 4: then 8 by 7 makes 56, and 4 is 60, from 65 leaves 5, and carry 6: then 8 by 9 is 72, and 6 makes 78, from 81 leaves 3, and carry 8: then 8 by 8 makes 64, and 8 is 72, from 72 leaves 0 remaining, and the worke will stand thus.

Example

Example.

7
4323
581115
86606150
714920798064 (79648.
89766666
897777
8999
88

Sixthly, I remove my Divisor, and seeke how oft I may have 8 in 3, which I find not once; I place a 0 in the quotient, and remove my Divisor one place more, and seeke how many times 8 is in 35: I finde I can have it but 3 times, I place 4 in the quotient beyond the cipher last placed; and say, 3 by 6 is 18, from 26 rests 8, and carry 2: then 3 by 7 is 21, and 2 is 23, from 30 leaves 7, and carry 3: again 3 by 9 is 27, and 3 is 30, from 30 leaves a 0, and carry 3: also 3 by 8 is 24, and 3 is 27, from 35 leaves 8, and the work will stand thus.

Example

Example,

```
        7
       43238
      58111507
     8660615078
   714920798064 (7964803
     8676666666
      89777777
       899999
        8888
```

Lastly, I remove my Divisor, and seeke how oft I may have 8 in 80; I find 9 times, I place 9 in the quotient, and say, 9 by 6 is 54, from 54 leaves 0, and carry 5; then 9 by 7 is 63, and 5 is 68, from 68 leaves 0, and carry 6: Then 9 by 9 is 81, and 6 is 87, from 87 leaves 0 and carry 8: last of all, 9 by 8 is 72, and 8 makes 80; from 80 there will remaine nothing but cyphers, and the worke is quite ended, and will stand, as in the example following.

Example.

```
        7
       43238
      58111507
     8660615078
   714920798064 (796489039
     8676666666
      89777777
       899999
        8888
```

The

The fourth and laſt kinde of Diuiſion, is the moſt abſolute, ſpeedy, and eaſie, not charging the memory at all, with keeping any numbers in minde; and alſo the proofe of your work is made by Addition, and not by multiplication, as hath heretofore been commonly uſed, as ſhall appear by example following.

The third Worke.

Firſt place your Dividend betweene two parallel lines, and your quotient at the right ſide of your Dividend, behind a crooked line, as before; then place your Diuiſor next to the left hand of your Dividend, behind a perpendicular line: and laſtly, marke how many figures your Diuiſor hath, and in the roome of thoſe figures place Ciphers under the figures of your Dividend, ſo many as your Diuiſor hath figures, as in the laſt example: which I will againe repeat in this place, and work it by this kinde of Diuiſion, making the proofe of the work by Addition of the ſame figures.

Example.

Diuiſor.	*Dividend.*	*Quotient.*
8976.	71492079 8064	(
	0000	

Firſt, I point to the firſt Cipher toward the

the left hand, & seek how oft I may have 8, the greatest figure in value of my Dividend having respect to the other figures of my Divisor, to take them also as often out of the figures above, and I find I can have it but 7 times, which 7 I place in the Quotient, and by that 7 I multiply my Divisor 8976, saying first, 7 by 6 is 42, place the 2 under the lowest cypher towards the right hand, and carry 4: then 7 by 7 is 49, and 4 is 53, set 3 under the next place to the left hand, & carry 5; then 7 by 9 is 63, and 5 is 68, place the 8 in the next place, and carry 6. Lastly, 7 by 8 is 56, and 6 in mind makes 62 which place down in their places, and the totall is 62832, to bee subtracted from 71492, and there will remain 8660; and the work will stand thus.

Example.

8660

8976| 71492798064 (7

00000

62832

Secondly, I cancell the first cypher to the left hand, and place one cypher more towards the right hand, under the 0, and then I point again to the first cypher, and see how oft I may have 8 in 86; I find 9 times, and placing

placing 9 in the quotient, by it I multiply 8976 my Divisor, placing the lowest figure in value under the lowest cypher to the right hand, and the rest in order, and I find the product to be 80784, which taken from 86600, leaves 5816 remaining, and then your work will stand, as in this

Example.

```
        581
       86606
-------------------------------------
8976 | 714920798064 (79
     | 00000
-------------------------------------
        628324
         8078
```

Thirdly, I cancell my Divisor, or one Cypher, and place one Cypher more under 7, and then seek how oft I may have 8 in 58, which I find 6 times, and by it I mnltiply my Divisor 8976 makes 53856, which taken from 58167, leaves 4311, and the work will stand as followeth.

Example.

```
        43
       5821
      866061
-------------------------------------
8976 | 714920798064 (796
     | 000000
-------------------------------------
      6183246
       80785
        538
```

Fourthly

Fourthly, I cancell one Cypher, and place a Cypher under 9, and then seek how oft I may have 8 in 43, which I find but 4 times, which I place in the quotient, and by it I multiply my Divisor 8976, makes 35904, which taken from 43119, leaves 7215.

Example.

```
        7
       432
      58111
     8660615
     ---------------------
8976 | 714927098064 (7964
     |  0000000
     ---------------------
       6 832464
        807850
         5389
          35
```

Fifthly, I cancell one cypher, and place a cypher under 8, and seek how oft 8 is in 72; I find 8 times, which placed in the quotient, I multiply my Divisor 8976 by it makes 71808, which taken from 72158, leaves 350, and the work stands as in the example following.

Example

Example.

```
                 70
                 9313
                581113
               86606150
8976 | 714920798064 (796480
       00000000000
       628324648
        8078500
         53898
          351
           7
```

Sixthly, I cancell one cypher, and place another under the 0, and seeing I find I cannot have 8 in 3; therefore I place a 0 in the quotient. Seventhly, I cancell one cypher, and place one other under the 6, and seeke how oft I may have 8 in 35; I finde but 3 times, and placing 3 in the quotient, by it I multiply 8976, makes 26928, which taken from 35006, leaves remaining 8078.

Lastly, I cancell the next cypher, and doe place another under the last figure of my Dividend 4, and seek how oft I may have 8 in 80; I find 9 times; and then placing 9 in the quotient, I multiply my Divisor 8976, and the quotient is 80784, equall unto the numbers above, & so being substracted from the numbers above leaves 0 remaining, and the

the work is ended, and will stand thus.

Example

```
                70
               43238
              5811290
             8660615070
-------------------------------------------
8976 | 714920798064 (79648039
       0000000000
-------------------------------------------
          628324648284
           8078500978
            5389860
             35128
               7
-------------------------------------------
The Proofe  714920798064
```

The proof of this Division is made by Addition of the figures under the line or Dividend, for if they returne your former Dividend, the work is true wrought; or otherwise bee sure some error is in your work, if there remains any fraction after your work is ended, then it is to be added into the lower figures in their several places, as shall appear by examples following:

Example.

Example. 121
11746
1 | 61254112

Divisor. *The Quotient.*

1798 | 1439819896794 (800789709
00000000000

14383
12586
14384
16182
12586
16182

The proof. 1439819890794 *by Addition.*

Here in this example working according to this latter form of work, there is advantage to bee taken; if the figures of the quotient be well noted, as here the fourth figure of the quotient is 7, the Product of the Divisor multiplyed by it is 12586, and also the seventh figure of the quotient is 7, so that comming to multiply the Divisor again by that 7 I need but take the Product of the first mutiplication by 7, which is 12586 and so place them in their severall places; as in the example, and so likewise there is 8 in the quotient two times, so that for

for the latter multiplication, I take the first product, 14384, and save that labour of multiplication of the Divisor by 8: and so of any other figure coming into the quotient more times then once, as by the examples will appear.

Example.

```
          775
         45549
        4244628
       118268737
-------------------------------------
7583 | 876593204 (115599
     | 000000000
-------------------------------------
        7583
         7583
         37915
          37915
           68247
            68247
-------------------------------------
The     876593204                Proof
-------------------------------------
        Example
356 | 7856792 (22069
    | 0000000
-------------------------------------
        7122064
         71130
           232
-------------------------------------
        785656792
```

E

How to divide by a Unite with Cyphers.

If you will divide by 10, or by 100, or 1000, or with any other unite with cyphers one or more; doe but off ſo many figures from the right hand of your Dividend, as there are cyphers in your Divisor, and the remains is your quotient.

Example.

If you would divide 786589 by 10, cut off the laſt figure 9, and the reſidue is your quotient 78658 $\frac{9}{10}$; or if you will divide by 100, cut off two figures and the quotient will be 7865 $\frac{89}{100}$; or by 1000, and the quotient will be 786 $\frac{589}{1000}$; and ſo of all other.

First.	*Second.*	*Third.*	
78658	9 7865	89 786	589
1 0	1 00	100	0
78658 $\frac{9}{10}$	7865 $\frac{89}{100}$	786 $\frac{589}{1000}$	

If you will divide the Product of 1999 ſquared; that is to ſay, multiplyed in itſelf, which is 3996001 by 1999, for expedition of work, after you have found the firſt figure of the quotient 1, and taken that out, I find the next figure will be 9; which taken out, the third and fourth figures are alſo found to be 9, and ſo you need no more multiplication for every ſeverall

by

but the first will serve for all, as in the example following.

Example.

```
        17
       1979
      1997990
-----------------------------------------
1999 | 3996001 (1999
     | 0000000
-----------------------------------------
       1999111
       179999
        1799
         17
-----------------------------------------
The proof of  3996001                this work.
-----------------------------------------
```

Example.

```
          89
         6899
        998899
       99989999
-----------------------------------------
99999 | 9999800001 (99999
      | 00000
-----------------------------------------
       8999911111
        89999999
         899999
          8999
           89
-----------------------------------------
      9999800001                 The Proof.
-----------------------------------------
```

Brief Rules by Multiplication and Addition.

If you multiply any number of nines: as if you will multiply, or ſquare 5 times 9 by 5 times 9, then place your nines in this order following.

Example.

9999900000
99999

99998 00001

Then ſay, 9 times 9 is 81, place the 1 under the firſt 9 to the right hand, and then ſubſtract the 1 from the firſt 9 to the left hand, and adde the Cyphers betweene, and the product is ended, and is 9999800001, as appeareth.

The

The proof of the work after the ordinary way.

	99999
	99999
	899991
	899991
	899991
	899991
	89999 1
The proof.	9999800001

To multiply any number by 9.

Adde a 0 to the number you intend to multiply, and then set the same numbers under them, and substract them from the uppermost, and the remains is the Product of that multiplication by 9.

Example.

	87987960
	8798796
The Product.	791891 64

To multiply by $\frac{1}{2}$, or $\frac{1}{3}$, or $\frac{1}{4}$, or $\frac{1}{5}$.

If you will multiply 856 by $24\frac{1}{2}$, first multiply 856 by 24 makes 20544; and then for one halfe, take halfe 856, which is 428, and adde into the former summe, makes the totall 20972.

Example.

856	856	856
$24\frac{1}{3}$	$24\frac{1}{3}$	$24\frac{1}{3}$
3424	20544	20544
27128	$285\frac{1}{3}$	214
42		
20972	$20829\frac{1}{3}$	20758

What number is that, which being divided by 24, the quotient will bee 856? Answer, multiply 856 by 24 makes, 20544 for the number that you seek.

Example,

856
24
3424
1712
20544

There is a plot of Land containing 848 Perches, the one side is 24, what must the other be? Answer, Divide 848 by 24, the quotient $35\frac{1}{3}$ for the other side.

12		$35\frac{1}{3}$
848	$35.\frac{2}{4}\frac{1}{3}$	24
244		
2		140
		708
		848

If you will divide the product of 5 times 9 squared, which is 9999800001, by 5 nines, then set the Divisor right underneath the Dividend, and adde them together, and cut off the 5 cyphers from the product, and the residue is the quotient.

Example.

	9999800001
	99999
The Quotient.	9999900000

What number is that, which being multiplyed by 15, the totall will be 756? Answ. divide 756 by 15, and the quotient is $50\frac{2}{15}$ or $\frac{2}{3}$, for the answer, or number you do seek.

Example.

	$50\frac{2}{5}$
	15
796 ($50\frac{6}{15}\frac{2}{5}$	
155	250
1	506
	756

There are 825 men, to march 15 in one ranke, how many files will they make. Divide 825 by 15, it makes 55 files.

Example.

	55
7	15
825 (55 *files*	
155	275
1	55
	825

There is 948 pound of powder to be imployed in an assault of Battery with 6 pieces of Ordnance; the first piece shooteth 4 pound, the second 5, the third 6, the fourth 7, the fifth 8, the sixth 10 pound, the question is, how many shootes each piece may make, to make an equall number of shots. Answer, first, finde how many pounds of powder all those pieces of Ordnance doe spend, in making each of them one shot: which

which by adding together the number of pounds that each severall piece spendeth will be found to be 40: Then divide 948 by 40, and it makes 23 shoots, and there will remain 28 pound.

Example.

4			23
5	22	*Shoots.*	40
6	948	(23.	
7	440		920
8			28
10			
40			948

THE RVLE OF REDUCTION.

TO reduce any great number into a ſmaller denomination itſis done by multiplication, and to reduce ſmall denominations into greater, it is done by diviſion: in this manner mark how many of the ſmaller denominations is contained in one of the next greater, and by that number you muſt multiply the greater, or the contrary, if you would bring ſmall denominations into greater, mark how many of the ſmaller denominations make one of the next greater, and that number ſhall bee your Diviſor.

Example.

If you would reduce pounds ſterling into pence, multiply your pounds by 240 pence, becauſe ſo many pence maketh a pound ſterling, and the totall will be the number of pence in the ſumme of pounds given. And contrariwiſe, if you would bring pence into pounds ſterling: divide your number of pence by 240 pence, which are the pence in one pound, and the Quotient will ſhew the number

number of pounds, in the summe of pence given: but in this operation the Tables in the beginning of this book will help much, for the speedy reducing of pounds, shillings, pence, yards, ells, bushels, pecks, pints, &c. into smaller or greater denominations: for if you search in the said Tables, you shall finde your multiplyer or divider, whereby you are to multiply, or divide your number given, to performe the worke, as shall appear by the severall examples following.

Reduction of Coine.

In 87652 pound, how many pence? in the Table of Coine I finde 240 pence makes one pound, so that in multiplying 87652 pound by 240, makes the summe of pence desired.

1. *Example.*

87652		
240	11	
	1852	
3506080	21036480	(87652 l.
175304	2444440	
	2222	
21036480 d.		

2. *Example.*

In 3759 pound 17 shillings 8 pence, how many shillings pence and farthings?

3759

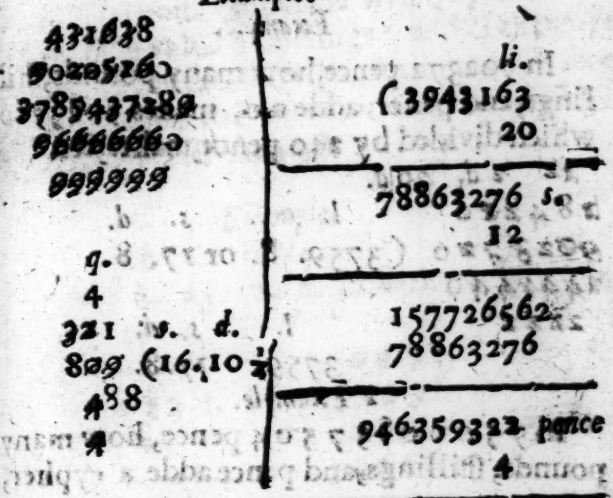
l.				
3759	q.			
20	598			
	72744			
75180	3609488			(3759
17	966660			
	999			
75197 s.				
12	q.			
	3			
150402	362	s.		d.
75197	848	(17.	32	(8
	488		4	
902372 d	4			
4				
3609488 q.		l.	s.	d.
	Proof.	3759.	17.	8.

3 *Example.*

In 3785437289 farthings, how many pounds, shillings, and pence: divide by 960 farthings, because 960 farthings make one pound sterling; and the remainer is farthings, which divided by 48, the farthings in one shillings, make 3943163 pound, 16 shillings 10 pence, $\frac{1}{4}$.

Example.

Example.



The Proof. 3785437289

How to bring pounds, shillings, and pence at the first work by Division.

To bring pence at the first worke into pounds, shillings, and pence: adde a 0 to your number of pence, and divide that sum by 240, makes pounds, and the last figure will be primes, every unite in value 2 shillings, and the remainer alwayes lesse then 24 pence, or one prime.

Example.

Example.

In 902372 pence, how many pounds, shillings, and pence; adde a 0, makes 9023720, which divided by 240 pence, makes, &c.

```
 12   2 d.  20 d.
184210          l.        s.  d.
9023720 (3759.  8. or 17.  8.
2444440
 2222                l.    s.  d.
                   3759.  17.  8.
```

2 Example.

In 75000837504 pence, how many pounds, shillings, and pence adde a cypher, or 0.

```
 1      2210
 3620111340                l.   s.
750008375040 (312503489   6.
2444444444440.
 2222222222
```

How to bring farthings into pounds, shillings and pence at the first work.

To bring farthings into pounds, shilings and pence at one work; adde a 0 to your number of farthings, and divde the summe by 960, the number of farthings in one pound sterling, makes pounds; and the last figure

figure of your Quotient will be primes every one in value 2 shillings: and if there remain 48, it is one shilling, or take 48 from the remainer for one shilling, the rest are farthings lesse then 48.

Example.

	l.	s.	d.	q.	
In	756.	13.	2.	2.	how many farthings.

```
      20
  ---------
   15133 s.
      12
  ---------
  181598 d.
       4
  ---------
  726394 q.
```

```
   665 q.
   54638
  7263940
   966660
    999
```

	l.	s.
	(756.	6.

	l.	s.	q.		s.	d.	q.
Totall is	756.	12.	58.	or	13.	2.	1.

In 3785437248 farthings, how many pounds, shillings, and pence, adde a 0, and divide by 960, makes 2943163 pounds, 8. primes, or 16 shillings, 0 pence.

```
    4316370
   901091660
  3785437248 0
   966666666
    9999999
```

	l.	s.
	(3943163.	8.

How

How to bring pence into pounds, shillings, and pence another way.

Divide your number of pence by 4, and the remainer is pence, then that Quotient by 6, and the remainer is groats alwayes lesse then 6 groats, or one prime, or 2 shillings; and the latter quotient, cutting off your Primes, is pounds, and so you have pounds, shillings and pence.

Example.

In 785697 pence, how many pounds, shillings, and pence, it makes 3273 pounds, 4 shillings 9 pence.

3 2 7 3 1 d. x 4 2 4 2 groats. l. s.
7 8 5 6 9 7 (x 9 6 4 2 4 (3 2 7 3 7
4 4 4 4 4 6 6 6

If you will bring farthings into pounds, shillings, and pence: divide first by 16, and the remainer is farthings, alwayes lesse then 16, or one groat; and then again by 6, makes pounds, shillings, and pence, as before, cutting off the prime line.

Example

Example.

In 8735672 farthings, how many pounds, shillings, and pence.

Farthings.	*Groats.*	
2 1		
91258	533	l.
8735672	(545979	(9096 | 6
1666666	66666	
11111		

The totall is 9099 *l.* 13 *s.* 2 *d.*

Reduction of Waight.

In 8756 hundreds, 3 quarters, 24 pound, 12 ounces Haberdepoise, 16 ounces to the pound, and 112 pound to the hundred, how many pounds and ounces.

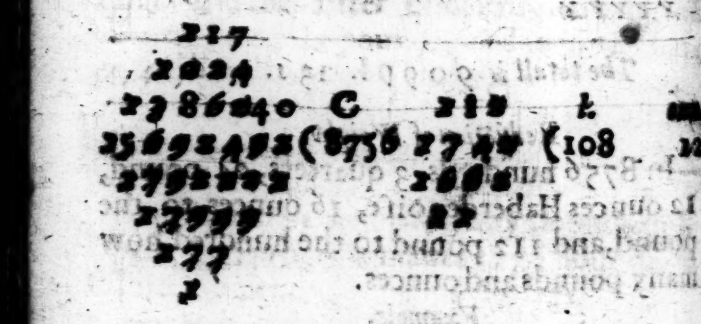
Example.

C.	*quart.*	*l.*	*ounces.*
8756.	3	24.	12.
112		$\frac{28}{24}$	$\frac{24}{100}$
			980780
17512			16
87568			
87560			5884680
			980780
			12
980780 *pounds.*		*ounces*	15692492

In

In 15692492 ounces Haberdepoyse, how many hundreds, quarters, pounds, and ounces; finde how many ounces makes 112 pound, in multiplying 112 pound by 16 ounces, makes 1792 ounces; by which divide, makes as in the example following.

Example.



	C.	qu.	l.	oun.
The Proof	6756	3.	24.	12.

Reduction of Measures.

In 2356 Acres, 3 Roodes, 27 Perches, how many Perches in all.

Example.

Example.

2356			
160	11		Per. rood.
	594	acres	2
141360	377107	(2356	147 (3
235647	166660		40
1	111		
377107			

	Acres.	Perches.	Roodes.
The Proof	2356	3	27

In 765437 Perches, how many Acres, Roodes, and Perches: divide by 160.

Example.

1 1				
12365	Acres.	3	roods	perches.
765437	(4783	157	(3	37
166660		40		
111				

Reduction

Reduction of time.

In 356 years, 24 dayes, 36 houres, and 22 minutes; how many days hours and minutes.

Example.

356
365

1780
21364
10682

129964 *dayes.*
24

519856
2599286
3

3119172 *Houres.*
60

187150320
22 *Minutes.*

Total of 187150342 *Minutes.*

The

The Proof.

In 187150342 minutes, how many houres, dayes, years, and minutes.

Example.

Minutes.	*Houres.*	*Dayes.*
151412	2212	
187150342	733536	
66666660	(3119172	(129964
	2444444	
	22222	

Dayes.	*Yeares.*
222	
2041	
129964	(356
36555	
365	

	Yeares,	*Dayes,*	*Houres,*	*Minutes.*
The proofe is	356	24	36	22.

Reduction of Motion.

In 11 Signs, 34 degrees, 25 minutes, 36 seconds, 24 thirds; how many fourths.

Example.

Example.

Sign.	*Degr.*	*Min.*	*Sec.*	*Thirds.*
11.	34.	25.	36.	24.

11 *Sign.*
30
330 *Degr.*
34
364

364 *Degr.*
60
21840 *Min.*
25

Minutes	21865	
	60	
Seconds	1311900	
	36	
Seconds	1311936	
	60	
	78716160	
	24	
Thirds	78716184	
	60	
Fourths	4722971040	*Product Total.*

The proufe.

In 4722971040 fourths, how many signes, degrees, minutes, seconds, thirds, & fourths.

Example.

Example.

Fourths,	Thirds,	
5403152	1 15232	Seconds.
4722971040	(78716284	(1311936
666666660	66666 0	

Seconds.	Minutes.	
153336	322	Degrees.
1311536	(21865	(364
666660	6660	

Degrees.	Signes.	Degr.	Minut.	Seconds.	Thirds.
364	(12.	4.	25.	56.	24.
330					

The proofe.

Questions by Reduction.

1 Question.

In 389 pound sterling; how many Dollars of 4 shillings 8 pence, or 14 groats a piece. Reduce 389 pound into groats, in multiplying them by 60, makes 23340 groats: which divide by 14 groats, makes 1667 dollars, and 8 pence.

Example.

Example.

	Groats.			
l.				
389	9902	*l.*	*s.*	*d.*
60	23340	(1667.	0.	8.
	14441			
23340	222			

2. Question.

In 300 pound sterling, how many angels at a 11 shillings a piece. Reduce 300 pound into shillings, makes 6000 shillings; which divide by a 11 makes 545 angels, and there will remaine 5 shillings.

Example.

l.			
300.	365 *angels.*	*s.*	
20	6000	(545.	5. *Rest.*
	2222	1	
6000	22		

3. Question.

In 3012 pound, how many Ryals of plate at 7 pence a Ryall. Reduce 3012 pound into pence, makes 722880 pence; which divided by 7, makes, as in the example.

Example

l. *Example.*

3012
240 *Pence.*

2464 *Ryals.* *d.*

120480 722880 (103268. 4.
6024 777777
722880 *pence*

4. *Question.*

If one Dollar be worth 4 shillings 8 pence, how many Dollars is in 108579 pound, 16 shillings sterling. Multiply your pounds by 60, makes 6514740; then reduce 16 shillings into groats by 3, makes 48 groats; which added into one totall, makes 6514788, which divided by 14, makes, as in the example.

Example.

Pounds. *Shillings.*

108579 16
60 3
6514740 48
48
Groats. 6514788

970320 *Dollars.*
6514788 (465342
2444444
22222

In 465342 Dollars of 14 groats a peece how much ſterling money: multiply your Dollars by 14, makes 6514788 groats, which divide by 60, makes 108579 pound 16 ſhillings.

Example.

465342
14 *Groats.*
3454 *l.* *s.*
1861368 6514788 (108579. 16.
465342 6666660
6514788

5. *Queſtion.*

If I receive 8060 French Crownes at 6 ſhillings a peece in France, how much ſterling muſt I pay for them at 6 ſhillings, 1 penny a peece: Multiply 8060 by 73 pence, the number of pence in one French Crown, makes 588380 pence: which divided by 240 pence, makes 2451 pound, 11 ſhillings 8 pence.

Example.

8060		
73	1	
	10214	*Pound.*
24180	588380	(2451
56420	244440	
	222	
588380		

Pence.

28	*s.*	*d.*
140	(11.	8.
122		
1		

6. *Question.*

If 564 yards of cloth cost 124 pound 12 shillings, how may I sell a yard to gaine 22 pounds 7 shillings, by the whole summe? Answer, adde 22 pound, 7 shillings, to 124 pounds, 12 shillings, makes 146 pound 19 shillings: which reduced into pence, makes 35268 pence: which divided by 564, makes 5*s.* 2*d.* $\frac{16}{24}$, of a farthing for the price to sell one yard, for to gaine 22 pound 7 shillings by the bargaine.

Example.

l.	s.
124	12
22	7
146.	19.

l.	s.
146.	19
20	
2939	
12	
5878	
2939	
35268	

3
80
1020 d.
35268 (62. $\frac{300}{567}$
5644
56

7. *Question.*

If 156 els of cloth cost 124 pound, what will one ell cost? Reduce 124 pound into shillings, makes 2480 shillings; which divided by 156, makes 15 shillings 4 pence $\frac{25}{156}$ &c.

Example.

	1	
124	624	s.
20	2480	(15 $\frac{100}{156}$ of a shilling.
	1566	
2480	15	

8 *Question.*

8. *Question.*

If I sell 342 yards of Velvet for 241 pound, 17 shillings, how do I sell one yard? Reduce your 241 pound 17 shillings, into shillings, makes 4837 shillings, which divided by 342 yards, makes 14 shillings, 1 penny, $\frac{41}{171}$ of a penny.

Example.

l.	*s.*			
241.	17.	4		49
20		2429 *s.*		12
4837		4837 (14 $\frac{49}{342}$		98
		3428		49
		34		588

246 *d.*

588 (1 $\frac{41}{171}$ of a penny, makes 14. 1. $\frac{41}{171}$*d.*

342

9. *Question.*

A certaine Noble man sent his servant to the Tower of *London*, with the Kings Majesties Warrant to the Mint-master for 3408 pound, 15 shillings, willing him to bring it in pieces of 12*d.* of 9*d.* of 6*d.* of 3*d.* of 2*d.* of 1*d.* of 1*ob.* commanding him to bring him of each sort a like quantity, or number of pieces; the question is to know, how many of each sort he shall bring unto his master, to make the said sum of 3408*l.* 15*s.* Reduce

your money into halfe pence, and also your ſeverall pieces of Coyne into halfe pence, and divide the greater by the leſſer, as in the example.

Example,

l.	s.
3408.	15.
20	
68175	
24	
272700	
136350	
1636200	

	12 d.
2x	9
29846 pieces,	6
1636200 (24420 5/27	3
677777	2
6666	10b.
	67

What

What Progreſſion Arithmeticall is, and the Rule.

PRogreſſion Arithmetical is nothing elſe but a brief ſumming, collecting or gathering together of divers numbers, increaſing by equall proportion, into one totall ſumme. As for example: 1,2,3,4,5,6,7,8,9, 10, &c. or 3,4,5,6,7,8, &c. or, 2,4,6,8, 10, 12, &c. or elſe by 3,as,5,8,11,14,17,20,23, 26, &c. or of all ſuch like kindes of Progreſſion, which do increaſe equally by 2, 3, 4, 5, or 6, or any other greater increaſe, and ſuch kinde of Progreſſion is called, Arithmeticall.

2. *To finde the ſum of a Progreſſion.*

Marke firſt how many ſeveral places there be in your Progreſſion, and note that down; then adde the firſt number of the Progreſſion to the laſt: then multiply halfe thoſe two numbers by the whole number of the places, or elſe halfe the number of the places, by the whole number of the firſt and laſt terme added into one ſumme, and both wayes will produce the totall ſumme of that Progreſſion.

Example.

There is a Progreſſion beginning at 4, and is continued unto 44, increaſing by 4. First, ſet downe the numbers of that Progreſſion, beginning at 4, and ending at 44.

Termes. 4.8.12.16.20.24.28.32.36.40.44.
Places, 1.2.3.4.5.6.7.8.9.10.11.

Here the firſt terme is 4, and the laſt terme is 44, which added together, makes 48, the one halfe which is 24, multiplyed by 11. the whole number of places makes 264 the totall.

Example.

44		44
4		4
48	481	48
11	52	
48	240	24
48	24	11
528	264.	24
264		264

First Queſtion.

A certaine man gave to his daughter in marriage,

marriage the first day of *January* 1 pound, and the second day 2 pound, the third day 3 pound, and so increasing every day 1 pound, untill 31 dayes were expired: the question is, what he should receive in the whole sum. First, 31 dayes is the number of places, and 31 pound is the last payment: adde the 1 terme 1 to the last terme 31, makes 32; which multiplyed by 15 one halfe, which is half 31; or take 31 and half 32, and the product will be the totall sum of his wives portion.

Example.

32
15½ 31
16
480 — *l.*
16 186 makes 496 *tot.*
31
496 —
496

How to finde the latter term of a Progression.

If you would know the latter terme of a Progression of 100 terms, increasing by 3, and beginning at 10; take one terme from 100 terms, and there will remain 99, which multiply by 3 the excesse or difference of the increase, makes 297; to the which if you

adde the firſt terme 10, makes 307 for the 100 terme of that Progreſsion.

2. Example.

100 *termes.*	99 *termes.*
1 *Subtract.*	3 *Exceſſe.*
99	297
	10 *firſt terme.*
	307

Or otherwiſe take the exceſſe 3 from the firſt terme 10, and there will reſt 7, which note apart, then multiply the number of places 100 by the exceſſe 3, makes 300; to which adde the 7, makes 307, as before.

Example.

10	10
3	3
7	307

Second Queſtion.

A certaine Merchant bought 78 pieces of *Exeter* Carſies, to pay 2 ſhillings for the firſt piece, 4 ſhillings, for the ſecond, 6 ſhillings for the third, &c. and ſo forth increaſing his price unto 78 pieces, 2 ſhillings in every piece; the queſtion is, what the Clothier had for his Carſeys.

Firſt, finde the latter terme; taking one from

from 78, makes 77; which multiply by 2, makes 154; to which adde the first terme 2, makes 156 for the 78, or last terme: then adde 2, the 1 terme, to 156, the last, makes 158, which multiply by 39, half of the number of places, makes 6162 shillings for the summe of money the Clothier shall receive for his 78 Carseys.

Example.

78		156
1		2
77		158
2		39
156	*the last terme*	1422
		474
		6162 *s.*
		or 308*l.* 2*s.*

To finde the number of terms.

There is a Progression, whose first term is 2, the last terme 156, and the excesse was 2, I would finde the number of termes.

Substract the first terme from the last, and divide the remainer by the excesse, the quotient is the number of terms, wanting but one. Example 2, the first terme from 156, the last leaves 154, which divided by 2, makes

makes 77, to which adde 1, makes 78, the number of terms.

```
                 1
156            154(77
  2             22   1 The number of Terms.
-----           ----
154              78
```

How to finde the excesse or difference.

Substract the first terme from the last, and divide the remainer by one lesse then the number of the Termes, and the Quotient will be the Excesse or difference.

Example.

Substract 10 the first terme, from 307 the last terme, there will remaine 297, which divide by 99, one lesse then the number of termes, which are 100, makes 3 the excesse.

```
307      00
 10     297 (3 the Excesse.
-------  99
297
```

To finde any middle Terme.

Substract a unite from the number of the terme you would know, and multiply the remainer by the difference, and to that product adde the first term, and the totall is the terme you do seeke.

Example.

Example.

To finde the 30 terme in the last example of 100 terms, subtract 1, rests 29; which multiply by 3, the excesse makes 87; to which adde the first term 10, makes 97 for the 30 term of that progression.

Example.

30	1	10	11	40	21	70
1	2	13	22	43	22	73
	3	16	13	46	23	76
29	4	19	14	49	24	79
3	5	22	15	52	25	82
	6	25	16	55	26	85
87	7	28	17	58	27	88
10	8	31	18	61	28	91
	9	34	19	64	29	94
97	10	37	20	67	30	97

How to find what number shall begin and finish a Progression.

To the number of terms adde one, which multiply by half the number of terms, and by the Product divide the sum of the Progression, and the quotient will be the first term, and excesse of that Progression.

Example.

At 16 payments 353 pound, 12 shillings is to be paid, the question is, what number must begin and continue the progression.

First

First the mony 7072. shillings; then to 16, the number of terms, adde 1, makes 17 which multiply by 8, half the number of terms makes 136 for Divisor; by which divide 7072, and the quotient is 52 shillings for the first payment and exceſſe, and by the ſame the others payments are found.

Example.

l.	*s.*			
353	12	*x*	*s.*	17
20		7072	(52	8
		1360		
7072		*x3*		136

Example.

	Nu			*nu.*
52	1	*The Proof.*	468	9
104	2		520	10
156	3	1872	572	11
208	4	5200	622	12
260	5		676	13
312	6	7072 *s.*	728	14
364	7		780	15
416	8		832	16
1872			5200	

Of continuall proportion, or Geometricall Progression.

TWo termes being given, to finde out a third in continuall proportion.

Divide the Quadrat, or Square of the second term by the first term, and the quotient shall be the third proportionall number or term sought for.

Example.

Let 8 and 12 be the two terms given, unto which it is required to find a 3 term or number in continuall proportion.

The quadrat or square of the second term 12 is 144, which being divided by the first term 8, the quotient will be 18 for the third proportionall, or term required.

To find a Mean proportionall betweene any two numbers, or extreams given.

Multiply the extreams given the one by the other: then extract the square root of the Product for the mean proportionall sought for.

Example.

Let 4 and 9 be the two numbers or extreams given, and let it be required to find a Mean, or middle proportionall between them. Multiply 4 by 9, the Product will be 36, the square root whereof is 6, which is the

the mean proportionall between 4 and 9 the extreams given.

Between 2 and 54, let 2 mean proportionals be desired by the square of 2, which is 4, multiply 54, it makes 216, the Cube root whereof is 6 for the least of the two Means: again, by 2 multiply 2916, which is the square of 54, makes 5832, of which the cube root is 18, for the greater mean proportionall sought.

To find any middle Term, or any other Term in a Geometricall Progression.

Increase your Progression by the excesse, and the square of the term when you cease, or the number multiplyed in it self squarely is the double of your term save 1, if the progression begin with an unite.

But if the first term be not an unite, then the square of any term is the double number of the said term: as if you should square the fixth term, then the Product would bee the 12 term: and so of any other term.

Example.

A Gentleman coming into a Market to buy a Horse, was asked 30 pounds for him. Nay (said the Gentleman) his price is over great. Then said the owner (having more craft and subtilty then the Gentleman, a com-

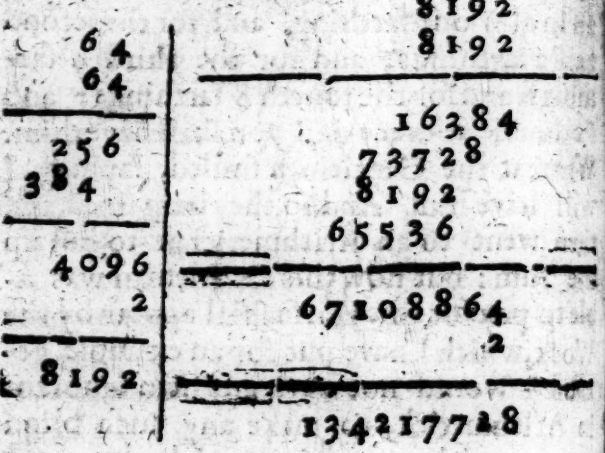
commonly the old Proverbe is true among Horſe-courſers); My Gelding hath foure ſhooes upon his four feet (quoth hee,) you ſhall give me for the firſt nail (there being 28 in all) one farthing, and for the ſecond nail 2 farthings, and for the third 4 farthings, and for the fourth 8 farthings; and ſo double at every nail you ſhall have him. Whereat the Gentleman ſmiled, ſaying; I will have him. And ſo they bargained, and then went to an Arithmetician to caſt up the ſum: but how this Gentleman was able to pay for this Horſe, ſhall appear by the Work, which I have put for an example, becauſe I would not have any man ignorant in Arithmetick, to make any ſuch blind matches without advice, as I know many have done to their coſt.

1 *Example.*

Now according to the rule, I increaſe this Progreſſion unto the 7 Term thus, 1, 2, 4, 8, 16, 32, 64; which 64 I multiply by it ſelf ſquarely, the Product is 4096, which by the rule is the 13 Term, which is 1 Term leſſe then the double of 7: then multiply that 4096 by 2, it makes 8192, which is the 14 Term. Then multiply 8192 by 8192, and the Product is 67108864, which is the 27 Term:

Term: the which being doubled makes the laſt term 134217728.

Example.



The Extreams and Exceſſe of a Progreſſion given to find the ſum.

Multiply the laſt term by the Exceſſe, and from the Product abate the firſt term, and divide the remainer by a Unite leſſe then the exceſſe, and the Quotient is the ſum of the Progreſſion deſired.

Example.

In the laſt examples, the exceſſe was 2, by which I multiply 134217728, and the Product is 268435456, from which abate 1, the firſt term and the remainer is 268435455; which

which should be divided by one unite lesse then the excesse which is 2, and 1 lesse is but 1; therefore seeing 1 doth neither multiply nor divide, I conclude the price of the horse to be 268435455 farthings, which I divide by 960, the farthings in one pound sterling, and the quotient is 27620 pound, 5 shillings 3 pence 3 farthings, the price of the horse, as in this example.

Example.

134217728

2

268435456

1 *farthing.*

268435455

Farthings.

952

	l.	s.
76299263		
268435455 (279620		2.
9666666		
999999		

	l.	s.	d.	q.
Totall.	279620.	5.	3.	3.

I have inserted in the next page the triall of this work, by increasing the Terms from 1 to 28, and also the addition of the totall, which shews the answer to be true.

Example

Example.

1	1
2	2
4	3
8	4
16	5
32	6
64	7
128	8
256	9
512	10
1024	11
2048	12
4096	13
8992	14
16384	15
32768	16
65536	17
121072	18
262144	19
524288	20
1048576	21
2097152	22
4194304	23
8388608	24
16777216	25
33554432	26
67108864	27
134217728	28
The total 268435455	

Other-

Otherwise, subtract the first term from the last, and divide the remainer by one ace lesse then the Excesse, and to the Quotient adde the last Term, and the totall is the sum.

Example.

To 12 men a sum of money is given, to the eldest $\frac{1}{3}$, to the second $\frac{2}{3}$, the remainer, and so to every one of the rest, and the last portion was found to be 4 pound, and the last half being also 4 pound, was given to a friend to see the mony to be equally distributed; what was each mans portion, and the sum given.

Let 4 bee the last portion, and twelfth Term, and so double untill you come to the first Term, and you shall find every mans portion. Then by this second rule, you shall find the totall to be 16380 pound, to which adde the Executors part 4 pound, makes 16384 pound.

2 Example.

A Gentleman bought a Mannor, with all the appurtenances for a summe of money unknowne, but hee was to pay at severall dayes of payment, by continuall triplation, of every payment, from the first payment which was 4 pound, and the last 8748 *l.* the

question

question is, what he paid for the said Mannor and Lands.

Example.

Substract the first terme 4, from the last terme 8748, there will remaine 8744; which divide by the excesse one lesse, *viz.* by 2, and the quotient will be 4372: to the which adde the latter terme 8748, and the totall is 13120 pound, for the summe which the said Mannor and Lands cost.

```
  8748        x
     4        8744 (4372
 ------        ~~2222~~  8748
  8744                 -----
                      13120
```

Fractions.

You shall understand that in the work of Fractions hereafter; in the next page following I have used another forme of working then heretofore hath been used: as when you will set forth any fraction, as $\frac{3}{4}$ thus heretofore used, set them out thus, 3:4, or $\frac{7}{8}$, place thus, 7:8 with a double prick between them: and so of any other, as $\frac{15}{20}$ of a pound, thus 15:20: of one pound: or fractions of fractions, thus $\frac{2}{3}$ of $\frac{3}{4}$ of $\frac{5}{6}$ of a pound, set them thus, 2:3 of 3:4 of 5:6 of a pound: and

and ſo of all other fractions, as ſhall appear afterward in the operations following; and ſo being placed, they are more apter and fitter for all the ſeverall operations of Arithmetick, then being placed after the ordinary forme of working. And thus much I thought good to expreſſe for the better underſtanding of the Rules hereafter following, in al fractionall operations. And now I will proceed unto the ſeverall rules of Fractions with their Examples.

How to reduce Fractions of Fractions.

Firſt Rule.

Multiply their Numerators one into another for a new Numerator, and likewiſe their Denominators for a new Denominator, and the work is ended.

Example.

If you would reduce 3:4 of 2:3 of 7: 8 of one *li.*ſterling; multiply 3 by 2 makes 6, and then 6 by 7 makes 42, for the new numerator to your fraction; then 4 by 3 makes 12, and 12 by 8 makes 96 for new denominator, and the fraction is 42:96 of a pound.

3:4 of 2:3 of 7:8 of 1 *li.* makes 42:96 of a *li.*

2 *Exam-*

Again 3:5 of 9:8 of 7 : 10 of 11 : 12 of 1 pound, makes 2079:4800.

3	
9	
27	8
7	5
189	40
11	10
189	400
189	12
2079	4800

3 *Example.*

What is 1:2 of 2:3 of 3:4 of 4:5 of 5:6 of 6:7 of one pound? Answer, crosse all the by as equall termes, and set the unequall terms 1:7 of a pound for the totall sum: but after the other form of work, it would have brought out 720:5040 of a pound, which by abbreviation makes 1: 7.

The Proof.

72: 504, 36:252, 18:126, 9:63, 3:21, 1:7

2 *Rule*

2 Rule. How to reduce Fractions of Integers.

Multiply all the Denominators of your ſeverall fractions for the new, or common Denominator to all your given fractions.

Then to finde new Numerators to each of your given fractions; multiply each fractions numerator into the denominators, of each ſeverall fraction, exceepting his own denominator, for the new numerators, as in this example.

Example.

If you would reduce 3:4 and 5:6 and 7:8 of a pound into one Denomination: multiply all the denominators together, ſaying, 4 by 6 makes 24, and 24 by 8 makes 192 for the common denominator to all the given Fractions.

Then multiply 3, the Numerator of the firſt Fraction, by 6, the Denominator of the ſecond Fraction makes 18, and 18 by 8, makes 144 from his Numerator.

Secondly, multiply 5, the numerator of the ſecond fraction by 4 and 8, the denominators of the other 2 fractions, makes 160 for the new Numerator of the ſecond fraction.

Thirdly, multiply 7, the numerator of the third fraction, by 6 and 4, makes 168.

Example.

N.D.		18	20	42	144
144	3:4	8	8	4	160
160	5:6				168
168	7:8	144	160	168	
192					192

The Totall, 472:192.

2. *Example.*

If you would reduce 2:3, and 3:5, and 8:9 of a pound.

N.D.			N.D.	
90.	2:3		7:10	1365
81.	3:5	Also,	10:15	1300
120	8:6		11:13	1610
135				1950

3. *Example.*

If you would reduce 7:8, 1:3, 2:3, 4:5, and 6:7 of a pound.

N.D.					
2205	7:8				
840	1:3	40.	1:2	40	
1680	2:3	70.	7:8	70	
2016	4:5	48.	3:5	48	
2160	6:7				
			80	158	
2520					

How to prove a Fraction by the knowne parts of Coyne.

In the first example of fractions of fractions, I find that 3:4 of 2:3 of 7:8 of a pound sterling to be 42:96 parts of a pound; for triall whereof take 7:8 of a pound, which 17 shillings 6 pence, or 210 pence, the 2:3 of that number is 140 pence; and 3:4 of 140 pence is 105 pence; now multiply 42 the numerator of your fraction by 240d. and divide by 96, the Denominator, makes 105 pence, the proofe as followeth.

4. *Example.*

s. d		d.
17. 6		
12.		140
	210 (70	70
34	33 2	35
176		
	140	105 d.
210		

42	42	
240	10080 (105 d.	
1680	9660	
84	99	
10080		

2. Example.

In the first example of Fractions of integers, there was 3:4, 5:6 and 7:8 of a pound, reduced into one denonination, and the totall by addition was 472:192 of a pound. Now for the proofe of the worke, multiply the numerator 472 by 240, makes 113280; which divided by 192 the denominator, makes 590 pence; which divided by 12 pence makes 2 pound, 9 shillings 2 pence. The proofe of this tryall in the parts of a pound, take first for 3:4 of a pound, or 15 shillings; then 5:6 of a pound is 16 shillings 8 pence; also 7:8 of a pound is 17 shilling 6 pence; and the totall added together, is 2 pound, 9 shillings, 2 pence, which proves the work to be true.

Example.

472
240
18880
944
113280

0
2720
xx3280 (590
1922
19

d.
xx2. s. d. 15. 0
590(49 2. 16. 8
xx2 2. 17. 6
x
2. 9. 2

3 Rule

3 Rule, Addition in Fractions.

If your fractions be of one denomination, then adde all your numerators together subscribing the common denominator under the line.

Example.

2:4	3:12	32:8
5:4	8:12	17:8
3:4	11:12	13:8
7:4		
	22:12	62:8
17:4		

The second Rule.

If your Fractions be not of one denomination, then reduce them by the second rule of Reduction to one denomination, and then adde them into one sum subscribing under the common denominator.

Example.

40	2:3	1440	24:12
45	3:4	836	13:10
38	4:5	2040	17: 6
133	60	4316	720

If you would adde 40:80, 30:200, and 50:90, cut off a cypher from each Numerator and Denominator, and the Fractions remain

maining will be of the ſame with the given fractions, and then work as before.

Example.

720	4:8	48	30:40
216	3:20	192	60:20
800	5:9	56	70:80
1736	1440	296	64

The proofe of Addition by parts of Coyn.

In the ſecond example, 2:3, 3:4, and 4:5 of a pound, are found to be 133 60, therefore divide 133 by 60, makes 2 pound, and 13:60 or 13 groats remaining, which is 2 pound, 4 ſhillings, 4 pence.

The proofe, adde 2:3 of a pound, which is 13 ſhillings 4 pence; and 3:4 of a pound, which is 15 ſhillings, and 4:5 of a pound which is 16 ſhillings into one totall, makes 2 pound, 4 ſhillings 4 pence as before.

Example.

Groat.				*s.*	*d.*
1.	*l.*	*s.*	*d.*	13.	4
237	(2	4	4	15.	0
60				16.	0
			l.		
			2	4	4

4 *Rule*

4 Rule, *Subſtraction in Fractions.*

As before in Addition, ſo alſo in Subſtraction, reduce your fractions to one common denomination, then ſubſtract the ſmaller numerator from the greater, and ſubſcribe the common denominator under the remainer.

1 Example.

If you will ſubſtract 3:4 from 7:4, there will remaine 4:4, or one integer.

Alſo 7:12 from 13:12, leaves 6:12, or 1:2 remaining. But if you will ſubſtract 2:3 from 7:8, then reduce them to one denomination, by the ſecond Rule of Reduction, and worke as in this example.

Example.

3:4	7:12	16	2:3
4:4	13:12	21	7:8
4:4	6:12		5:24

2. Example.

Againe, 3:8 from 15:16, leaves 72:128, remaines

120	15:16
48	3: 8
72:	128

The proofe of Subſtraction by the parts of Coyne.

In the example before, where I take 2:3 from 7:8, the remainer was 5:24 of a pound: which is 5 times 10 pence, or 4 ſhillings 2 pence. Alſo for proofe, take 13 ſhillings 4 pence, which is 2:3 of a pound, from 7:8, which is 17 ſhillings 6 pence, there will remaine 4 ſhillings 2 pence, as before.

5 *Rule, Multiplication in Fractions.*

Multiply Numerator by Numerator, and Denominator by Denominator, to make the new Numerator, and new Denominator, and the work is ended.

1 *Example.*

If you will multiply 2:3 by 3:4, the produſt of that multiplication will be 6:12, or 1:2.

6	15	2520
2:3	5:7	35:60
3:4	3:4	72:120
12	28	7200 or 252:720

The proofe of Multiplication by the parts of Coyne.

In the firſt example, 2:3 is multiplyed by 3:4, and the product makes 6:12 of a pound

or

or 10 ſhillings: for proof whereof multiply 13 ſhillings 4 pence, or 160 pence, which is 2:3 of a pound by 15 ſhillings, or 180 pence, which is 3:4 of a pound, and the Product will be 28800, which being divided by 240 pence, the pence in one pound will yeeld in the quotient 120 pence, or 10 ſhillings.

Example.

s.	*d.*		
13.	4.	15	180
12		12	160
26		30	10800
134		15	180
160		180	28800.

40	*d.*		*s.*
28800	(120.	222	(10
24440		222	
22		2	

6 Rule, Diviſion in Fractions.

Multiply the Numerator of the Dividend by the Denominator of the Diviſor for a new Numerator; and ſecondly the Denominator of the dividend by the Numerator of the diviſor, for new Denominator, and the diviſion is ended: or otherwiſe place your dividend firſt above, and the diviſor underneath, after

my manner, and multiply croſſe, and place then as in theſe examples.

If you will divide 6:12 by 2:3, which was the product of 2:3 by 3:4 in the laſt example, then it will bring out 18:24, or 3:4, the other number, which proves the work good.

Example.

18	10	360
6.12	2:3	12:15
2: 3	4:5	18.30
24	12	240

If the Denominators of the Fractions be both alike, then divide their numerators one by another; as 27:32 divided by 3:32, makes the quotient to be 9:32.

Example.

9	3	3
27:32	9:8	21:12
3:32	3:8	7:12
32	8	12

If the Numerators be alike, then ſet the denominator of the Diviſor above the Denominator of the Dividend, as 3:4 by 3:8, makes the quotient 8:4, or two Integers, and contrariwiſe 3:8 by 3:4 makes the quotient 4:8, or 1:2.

Example.

Example.

8	4	24
3:4	3:8	7:16
3:8	3:4	7:24
4	8	16

The proofe of Division by the parts of Coyne.

In the second of the first example, where I divide 2:3 by 4:5, the quotient is 10:12, which in coyn is 16 shillings 8 pence: for proofe I do multiply 2:3 of a pound, which is 163 pence, by 24, makes 38400; which divide by 4:5, or 192 pence, makes 200 pence, which is 16 shillings 8 pence: the proofe.

Example.

s.	d.		s.		
2:3 13	4	4:5	16		160
12			12		240
160			192		6400
					320

d.		d.		
38400	(200	88	s.	d.
192		88	(16	8
198		192		
2		2		

7 Rule,

7 *Rule, How to worke whole numbers with Fractions.*

If you would adde, ſubſtract, multiply, or divide whole numbers with fractions, ſet the whole numbers fraction-wiſe, and put 1. after for denominator, and then work as in the Rules before, as if they were all Fractions, and no whole numbers.

Example.

If you will adde 33:1 with 13:4, multiply the Numerator 33 of your whole number, by the Denominator of your Fraction 4, makes 132:4, which adde unto 13:4, makes the totall 145:4

132	33:1		896	128:1
Ad. 13	13:4		36	36:7
145	: 4		932	: 7

2 *Example.*

If you will ſubſtract 13:4 from 33:1, reduce them, and ſubſtract 13 from 132, reſt 1194

132	33:1		896	128:1
Sub. 13	13:4		36	36:7
119	: 4		860	: 7

3 *Example.*

Example.

If you wil multiply 33:1 by 13:4; multiply the numerators, 33 by 13, makes 429; to the which subscribe the Denominator 4, makes 429:4.

33 : 1	128 : 1
13 : 4	36 : 7
429 : 4	4608 : 7

4 Example.

If you will divide 33:1 by 13:4, multiply crosse 33 by 4, makes 132, to bee set above; then 13 by 1 makes 13 for denominator.

132	108		896
33 : 1	27 : 1	128	: 1
13 : 4	32 : 4	36	: 7
13	32		36

8 Rule. How to work whole numbers and Fractions with Fractions.

Reduce your whole numbers into Fractions in multiplying your whole number by the denominator of your Fractions; and unto that product adde the Numerator of your fraction, and subscribe the old denominator.

1 Example.

If you will multiply 28 3:4 by 3:5 reduce

28 3:4 into fourths in multiplying by the Fractions Denominator, 4, saying, 28 by 4 makes 112, to the which adde the Numerator of your Fraction 3, makes 115 : which multiplyed by 3:5, makes 345:20.

28	3 : 4	115 : 4
4		3 : 5
115	: 4	345 : 20

If you will divide 28 3:4 by 3,5; reduce them as before, and then multiply them crosse, makes 115:4 by 3:5, is 575:12.

Example.

575
12 5 4
3:5

12

3 Rule. How to abbreviate a Fraction.

Take one half of the Numerator, and 1:2 of the Denominator, as oft as you may until the lowest numbers in value of your fractions comes to be primes together, which are such numbers, as cannot be abbreviated no lower.

Example

Example.

In the firſt example of fractions of fractions, the fraction was 72:504, which was abbreviated unto 1:7 of a pound: firſt, take half the Numerator 72, which is 36, then half the Denominator 504, which is 252; then 1:2 of 36 is 18; and 1:2 of 252 is 126. Againe, 1:2 of 18 is 9, and 1:2 of 126 is 63; then I ſee I cannot take 1:2 of the remainer, wherefore I ſee I may abbreviate them by 3 ſtill, ſaying, the third part of 9 is 3, and 1:3 of 63 is 21: laſtly, 1:3 of 3 is 1, and 1:3 of 21 is 7, which place thus, 1:7 ſo that I find by abbreviation that 72:504 of a pound, is one ſeventh part of a pound.

Example.

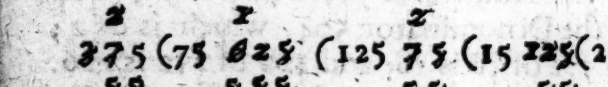
72:504 36:252 18:126 9:63 3:21 1:7

If you cannot take half the numbers, then mark whether they will abbreviate by 3:4, or 5, or any other number under 9; as for example, I would abbreviate 92:144, I ſee I may abbreviate both by 4; then taking 92, divide by 4, makes 23, and 144 by 4 makes 36, totall 23:36, &c.

If you will abbreviate, 375:625 of a pound, you may eaſily ſee they will be both abbreviated by 5: wherefore divide the numerator and Denominator both by 5, as oft as you can

can, untill they become primes together, and you shall find the value of that fraction to 3:5 of one pound, or 12 shillings.

Example.



10 *Rule. How to find the value of any Fraction.*

Multiply the Numerator of your fraction by the parts contained in the whole, and divide that Product by the old Denominator, and the Quotient will bee the value of that fraction in the known parts of Coin.

Example.

If you would know what 24:32 parts of a pound is in Coin: multiply your Numerator 24 by 24, the pence in one pound, makes 5760; which divided by 32, the denominator, makes 180 pence, or 15 shillings, the true value of that fraction.

Example.

Example.

24				
240	25	d.	6	s.
———	5760	(180	180	(15
960	3222		122	
48	33		1	
———				
5760				

What is 343:522 parts of a yard; multiply 343 by 16, the number of nails in one yard makes 5448; which divided by 522, makes 10 nailes, and 268:522 parts of a nail.

Example.

343	26	*Nayles.*	
16	5488	(10	268:522
———	5222		
5488	52		

11 *Rule. How to change the Sirname of a Fraction.*

Multiply the numerator of your Fraction by the parts or new Sirname of that you would change your fraction into, & divide by your denominator, and the quotient will be your desire.

1 *Example.*

I have 324:1620 parts of a year, which I would

would convert into dayes; I multiply 32[illegible] by 365, the number of dayes in one year makes 118260; which divided by 162[illegible] makes 73 dayes, the value of that fraction.

Example.

```
      324
      365
  ---------
     1620                  480 Dayes.
    1944                 118260 (73
    972                   16220
  ---------
  1182[illegible]
```

I would change 256 : 5292 parts of a pound into pence, multiply the Numerator 756 by 240 pence, makes 181440, which divide by the denominator 5292, and the quotient is 34 pence 1512:5292.

Example.

```
     756
     240        151
  ---------    22682      d.
   30240      181440   (34, 1512:5292
   1512        52922
  ---------      529
  181440
```

12. *Rule. Questions of Fraction.*

What number is that to the which if you doe

doe adde 3:4, the Totall will bee 5:6 of a pound? Answer; reduce them to one Denomination, & they are for 3:4 of a pound 18:24, and the 5:6 are 20: 24, from which substract 18, rest 2: 24 of a pound or 20 pence: the proof, take 3: 4 of a pound, which is 15 shillings; and adde 20 pence to it, and the Totall is 16 shillings, 8 pence; which is 5:6 of a pound.

Example.

N:	N:	s.	d.
18	3:4	15	0
20	5:6	1	8
2	24	16	4

2 *Example.*

What number is that, from which if you doe substract 8: 12, the remainer will bee 6:10? Answer, reduce them, and adde them both into one Totall, makes 152:120 of a pound for the number you doe seek.

The proof in coyn; 152:120 of a pound is 304 pence, and 8: 12 of a pound is 160 pence, which taken from 304, leaves 144 pence remaining, which is 6:10 of a pound,

or

or 12 ſhillings, as appeareth by the work.

80	8:	12	152	304	
72	6:	10	2	160	
152		120	304	144	2

What number is that which being multiplyed by 3:5, the Product will be 9:20. Anſwer, divide 9:20 by 3:5, and the Quotient is 2 45:60, or 3:4. For the Proof multiply 108 pence which is 9:10 of a pound, by 240, the product is 25920; which divide by 144, or 3:5, which is 12 ſhillings, makes 180 pence, or 3:4 of a pound.

3 *Example.*

45			d.	108	
9 :	20	28920	(180	240	
3 :	5			4320	
60				216	
				25920	

Example.

What number is that, which being divided by 7:8, the Quotient will be 4:5. Anſwer, multiply 7:8 by 4:5, the Product is 28:40, or 7:10, which makes 14 ſhillings.

The proof in coyn 7:8, which is 210 pence, by 4:5, which is 192 pence, and the Product

Product is 40320; which divide by 240, makes 168 pence, or 14 shillings: behold the example following.

Example.

s.	d.
7.8 or 17	6.
12	
40	
17	
210	

	s.
4:5 or	16
	12
	32
	16
	92

	192
	210
	1920
	384
	40320

x			
xßßß	d.	4	s.
4ßzzß	(168	xß8	(14
x444ß		xzz	
zz		x	

Rules

Rules of Practice.

Rules of Practice by the first Table.

TO work by the Aliquot parts of a pound, search in the first Table for your given price, and by that number found, divide your number given, and the quotient is your answer in pounds, and the remainer is the fraction of one pound.

But if the given price be not found exactly at the first entrance, then find 2, or more numbers, to make the given price, and then work as followeth.

Example.

If one yard cost 3 shillings 4 pence, what will 7859 yards cost at that rate: I enter the Table, and again 3 shillings 4 pence, I find 1 : 6 of a pound; wherefore I divide 7859 by 6; makes 1309 pound, 5 : 6 of one pound, or 16 shillings 8 pence.

10	5	l.	s.	d.
7859	(1309	5:6 or 16		8
6666				

The

The first Table.

The second Table.

The Aliquot parts of a pound.				Shillings.			
s.d	par.	s.d	par.	s.	par.	s.	par.
1	240	1.4	15	1	$\frac{1}{20}$	11	5.$\frac{1}{3}$
2	120	1.8	12	2	$\frac{1}{10}$	12	6.
3	80	2.0	10	3	1.$\frac{1}{3}$	13	6.$\frac{1}{3}$
4	60	2.6	8	4	2.	14	7.
5	48	3.4	6	5	2.$\frac{1}{3}$	15	7.$\frac{1}{3}$
6	40	4.0	5	6	3.	16	8.
8	30	5.0	4	7	3.$\frac{1}{2}$	17	8.$\frac{1}{3}$
10	24	6.8	3	8	4.	18	9.
0	20	10.0	2	9	4.$\frac{1}{3}$	19	9.$\frac{1}{2}$
3	16	20.0	1	10	5.	20	10
Divisors				*Multipliers.*			

At 16 pence an ell, what will 8976 ells cost? I find for 16 pence my Divisor to be 15, and so dividing 8976 by 15, the quotient is 598 pound, 6:15, or 2:5, which is 8 shillings.

Example.

Example.

x
x42 l. s.
8976 (598 6 : 15', or 2 : 5 is 8
xxxx
xx

Adde a Cypher to your number given, and the laſt figure of your quotient will be primes, every one in value 2 ſhillings, and the remainer is the Fraction of a Prime, alwayes leſſe then 2 ſhillings. In the firſt example, the remainer was 5:6 of one pound, but if you adde a Cypher, the Quotient will be 1309 pound, 8 primes or 16 ſhillings, and the remainer is 2:6 of one prime, or 1 : 3, which is 8 pence.

x x2 l. s. d.
78xxx (1309 8 1:3 or 16 8.
xxxxx

At 2 ſhillings 6 pence a pound pepper, what wil 2436 pound coſt: find 2 ſhillings, 6 pence 1:8 of a pound, wherefore adde a Cypher, and divide by 8, makes 304 pound 10 ſhillings.

4 l 1 s.
2436 (304 5 or 10
8888

At

At 8 pence a pound Ginger, what will 77856 pound cost, divide by 30, adding a Cypher, makes 2595 pound, 2 primes or 4 shillings.

121	l	|	s.
778560	(2595	2 or	4
333330			

At 17 pence a pound Sugar; what shall 23459 Pound cost: for 12 pence, divide by 20, makes 1172 pound 9 primes, 1:2, or 19 shillings: then for the rest of your given price, which is 5 pence, take 48, and divide, and the quotient is 488 pound, 7 primes, which added together into one sum, makes the totall 1691 pound, 13 shillings 7 pence.

Example.

1 1 1	l.	|	
234590	(1172	9	
222220			
431			
42154	l.	1	
234590	(488	7	7:24
48888	l.		
444		s.	d.
	1172	19	0
	488	14	7
The Sum.	1661	13	7

At 6 shillings 8 pence a pound Cloves, what will 3769 pound weight cost: divide by 3, makes 1256 pound, 3 primes 1:3, or 6 shillings 8 pence.

1111	l.		s.	d.
37690	(1256	3 1:3, or	6	8
33333				

At 22 pence an ell of Holland; what 3768 ells cost: for 20 pence divide by 12 makes 314 pound, and for 2 pence by 120, makes 31 pound, 4 primes, or 8 shillings; the totall is 345 pound, 8 shillings.

18	l.	14	l.	s
37689	(314	37680	(31	4
1222		12220		
11		11		

314	0
31	8
345	8

If one ell of Holland cost 20 pence, how many ells shall I buy for 345 pound: multiply 345 by the price, which is 1:12, or

12, makes 4140 ells, the sum desired.

345	56	*l.*
12	4240	(345 The proofe.
	2222	
690	31	
345		
4140		

If one ell of Ozenbrigs cost 8 pence, what sum of elles will 78 pound buy me: multiply by 30, makes 2340 elles.

78
30

2340 *elles.*

78		
15	12	*elles.*
	2270	(78
390	259	
78	2	
1170		

At 15 pence an ell of Canvas, how many elles will 100 pound buy: multiply by 16, makes 1600 elles.

If one elle of parchment lace cost 1 penny, how many elles shall I have for 73 pound: multiply by 240, makes 17520 ells.

Example.

240
73

720
1680

17520

7 l.
17520 (73
2440
2

If one Acre of land be 5 shillings, how many Acres may I hire for 132 pound: multiply by 4, makes 528 Acres.

132
4

528 Acres.

The Rule of Practice by the second Table.

If the price given be any number of shillings, search in the second Table for the price given, and by the number there found: multiply your number of yards, ells, pounds or pieces, and cut off the last figure with a dash of the penne for primes, every one in value 2 shillings, and the Product is the sum of pounds and shillings that your given number will cost.

Example.

At 2 shillings an ell of Holland, what will

will 956 elles coſt: in the ſecond Table I finde the tenth of the number given, ſo that if you take the tenth of 956, it is 95 pound, 12 ſhillings onely by cutting off the laſt figure by a daſh of the pen.

946 Elles at 2*s.* an ell, makes 95 | 6, or 12*s.*

At 7 ſhillings an ell of Cambrick, what will 789 elles coſt: multiply by 3 1:2, or take half of the given number, and multiply the whole number given, by 3, makes in one ſumme, cutting off the prime line, 276 pound, 3 ſhillings.

Example.

789
3 1:2
2367
394 1:2
276 | 1:2

Alſo 1240 els at 7*s.* 434*l.*

3 1:2
3720
620
434 | 0

Example.

240
73

720
1680

17520

7 l.
17520 (73
2440
2

If one Acre of land be 5 shillings, how many Acres may I hire for 132 pound: multiply by 4, makes 528 Acres.

132
4

528 Acres.

The Rule of Practice by the second Table.

If the price given be any number of shillings, search in the second Table for the price given, and by the number there found: multiply your number of yards, ells, pounds or pieces, and cut off the last figure with a dash of the penne for primes, every one in value 2 shillings, and the Product is the sum of pounds and shillings that your given number will cost.

Example.

At 2 shillings an ell of Holland, what will

will 956 elles coſt: in the ſecond Table I finde the tenth of the number given, ſo that if you take the tenth of 956, it is 95 pound, 12 ſhillings onely by cutting off the laſt figure by a daſh of the pen.

946 Elles at 2*s.* an ell, makes 95 | 6, or 12*s.*

At 7 ſhillings an ell of Cambrick, what will 789 elles coſt: multiply by 3 1:2, or take half of the given number, and multiply the whole number given, by 3, makes in one ſumme, cutting off the prime line, 276 pound, 3 ſhillings.

Example.

789
3 1:2
2367
394 1:2
276 | 3:2

Alſo 1240 els at 7*s.* 434*l.*

3 1:2
3720
620
434 | 0

At 25 shillings a piece Raisons, what will 356 pieces cost: take alwayes halfe the number of shillings of your given price for your multiplyer, and worke as before, and the Product is 456 pound, 0 prime.

Example.

356
12 1:2
4272
178
445|0

Also 75032 pieces at 26 shillings a piece.

75032
13
225096
75032
97541|6

If one barrell of Sope cost 47 shillings, what will 3584 barrels cost: multiply by 23 1:2 makes 8422 pound 8 shillings.

Example,

Example.

3584
23 1:2

10752
7168
1792

8422|4

At 3 pound 6 shillings a Barrel, what will 124 cost.

124
33

372
372

409|2

If one Acre of Land cost 6 pound 8 shillings, what will 758 Acres cost: multiply by 64 shillings, which is halfe the price, the

Product is 4851 pound, 4 ſhillings, or two primes.

```
   758
    64
 ------
  3032
 4548
 ------
     |
4851 |2
```

How to prove the laſt queſtion; or any other of like kinde. If one Acre of land coſt 6 pound 8 ſhillings, how many Acres ſhall be bought for 4851 pound, 4 ſhillings; divide your number of pounds and ſhillings by one halfe of the number of ſhillings in the price given, adding a cypher to your number of pounds, and the quotient is the number of Acres of Land the ſaid ſumme will buy at that rate.

Example.

The given ſum is 4851 pound, 2 primes, or 4 ſhillings; which divided by halfe the given price, which is 64 ſhillings, brings into the quotient 758 Acres, and ſo of any other ſumme.

5
37 *Acres*
48822 (758
6444
66

A Merchant bought Cambricks cost him 855 pound, 18 shillings; the question is, how many pieces he had, paying for every piece 27 shillings? Answer, adde a cypher to your number given, which is 855 pound, 9 primes, makes 85590; which divide by half the price given, which is 13 1:2; or divide by 135 the quotient will be 634 pieces: now the reason wherefore a cypher is added to the number given, having 9 primes in it is, because I divide by 13 1:2 which hath one fraction; and this rule is generall.

Example.

What cost 634 pieces at 27 shillings.

634
13 1:2

454 *pieces*
85590 (634
23555
135
2

1902
634
317

The proofe. 855|9

How to prove one queſtion in the Rules of Practice by the working of another.

If you will prove any queſtion in the Rules of Practice, by a ſecond example, mark the complement, or want of your given price from one pound, and worke the ſame number at that price which doth want, and the totall of thoſe two ſummes added together, makes the juſt number of pounds of the given ſumme.

Example.

At 16 ſhillings a piece of Fuſtian, what will 320 pieces coſt. Anſwer, multiply by 8 makes 256 pound, 0 prime.

Againe, 16 ſhillings your given price wanted 4 ſhillings of one pound, wherefore work 320 at 4 ſhillings, which is multiplyed by 2 primes, makes 64 pound, 0 prime, the totall is 320 pound which proves the former worke.

320	320	256
8	2	64
2560.	64 | 0.	320 *pound.*

Example.

At 13 ſhillings a piece of Lawne, what will 752 pieces coſt: 752 by 6 1:2, makes 488 pound, 8 primes.

At

At 7 shillings a piece, what 752 pieces; 752 by 3 1:2, makes 263 pound, 2 primes, totall is 752 pound.

Example.

752	752
6 1:2	3 1:2
4512	2256
376	376
488 |8	263 |2
2632	
4888	
752 |0	

Rules

Rules of Practice by the third Table, the most excellent of all the other.

The third Table.

The Aliquot parts of 24.

d.	par.	d.	part.
1	24.	13	2. 24
2	12.	14	3. 4
3	8.	15	2. 8
4	6.	16	3. 3
5	12.8	17	3.4. 8
6	4.	18	2. 4
7	8.6	19	2.8. 6
8	3.	20	2. 3
9	4.8	21	2.4. 8
10	4.6	22	2.4. 6
11	3.8	23	2.3. 8
12	2.	24	$\frac{1}{10}$

Diviſors.

The third Table.

The parts of a ſhilling.

d.	par.	d.	par.
$\frac{1}{4}$	48	7	2. 12
$\frac{1}{3}$	24	8	1. $\frac{1}{3}$
$\frac{1}{2}$	18	9	2. 4
$\frac{3}{4}$	16	10	2. 3
—	—	11	2.3. 6
d.		12	Id cm.
1	1		
2	2		
3	3		
4	4		
6	6		

Divide

Divide the number of ells, yards, pounds, or pieces given by the number, or numbers found in the third Table, alwayes cutting the last figure for primes, if that any remain after Division, it is alwayes lesse then 1 prime or 2 shillings.

Example.

At 3 pence a pound Licoras, what will 23728 pound cost? Answer, for 3 pence in the third Table, I finde my Divisor to be 8, by which I divide my given number, makes 1546 pound, 6 primes, or 12 shillings.

4	54		*l.*		*s.*
23728		1546	6	or	12
8888					

At 9 pence the pound Ginger, what will 8768 pound cost? for 6 pence divided by 4 makes 219*li.* 2 primes, then for 3 pence the residue of the price divide by 8, makes 109 pound, 6 primes, totall is 328 pound, 16 shillings. Or otherwise divide by 4 for 6 *d.* and then take halfe that product for 3 pence, and adde them into one summe, as before.

Example

3	*l.*		4	*li.*	
8768	2192		8768	1096	
4444			8888	2192	
				328	8

At

At 11 pence the yard Canvas, what will 2356 coſt? for 8 pence divide by 3, makes 78 pound, 5 primes, 1:3 or 8 pence; and for 3 pence divide by 8, makes 29 pound, 4 primes, 1:2 or 12 pence; the totall is 107 pound, 19 ſhillings, 8 pence.

	l.	d.			l.		
2356	78	5 8		2356	29	4	1:2
222				888			

l.	s.	d.
29	9	0
78	10	8
107	19	8

A ſecond Example the proofe of the laſt.

At 13 pence a pound fine Sugar, what will 2356 pound coſt? for 12 pence divide by 2, makes 117 pound, 8 primes, or 16 ſhillings: then for 1 penny, divide by 24, makes 9 pound, 8 primes, 4 pence, the totall is 127 pound, 12 ſhillings, 4 pence; which added to the former ſumme in the laſt example, makes 235 pound, 12 ſhillings; and ſo much will 2356 pound coſt, at 2 ſhillings a pound, becauſe the two given prices make one prime, or 2 ſhillings.

Example

Example.

21	l.	s.	d.	29 l.	d.
2396 (117	8	d.	2396 (9	8	4
2222	9	8	4	244	
				2	
	127	6	4		
	127	12	4		
	107	19	8		
	235	12	0		

At 16 pence a pound Sugar, what will 78432 pound coſt; work for 8 pence, and double the ſum, makes 5228 pound, 8 primes or 16 ſhillings.

At 8 pence a pound Almonds, what will 78432 pound coſt; divide by 3 makes 2614 pound, 4 primes, or 8 ſhillings; which added with the former Example, makes 7843 pound, 2 primes, which is the price that 7843 pound will coſt at 2 ſhillings a pound and proves both examples true.

Example.

Example.

x xx	l.	l.
78432	(2614	4
33333	2614	4
	5228	8

x xx	l.	1
78432	(2614	4
33333	5228	8
	7843	2

At 18 pence a pound Comfits, what will 78432 pound coſt: for 12 pence take halfe the given number; and for 6 pence take half of that ſum, which added into one totall makes 5882 pound, 4 primes.

78432

39216
19608

58824 *Primes.*

The totall is 5821. 8 *s.* 0 pence.

At 6 pence a pound ſmall Ginger, what will 78532 *li.* coſt: divide by 40 makes 1960 *li.* 8.

li. 8 primes, or 15 shillings; which added to 5882 pound, 8 shillings, makes 7843 pound, 2 primes, the price at 2 shillings.

32	l.			5882	4
78432	(1960	8		1960	8
4444					
			Proof	7843	2

These Tables may serve also, if the price be above 2 shillings, or one prime: as if you shall say at 3 shillings 6 pence an elle, what 782 elles: here I see the given price is compounded of 3 times 6 pence, wherefore I work first for 6 pence, in dividing by 4 makes 16 pound, 11 shillings, which multiply by 7, makes 136 pound, 17 shillings for the price of 782 elles at 3 shillings, 6 pence the elle.

At 6 pence an elle, what 782 elles: find for 6 pence, 19 pound 11 shillings, which added to the former sum in the last example, makes 156 pound, 8 shillings, which is the sum that 782 ells, will cost at 4 shillings the elle.

Example.

Example.

32	l.	s.	
782	(19.	5	1: 2 or 11
444			

l.	s.		
19	11		782
7	7		2
136	17	*The Proof.*	156|4

At 4 shillings 8 pence the elle Holland, what will 2 148 ells cost. I find 4 shillings 8 pence to be 14 Groats, so dividing by 6 for one Groat, makes 35 pound, 8 primes: which multiply by 14, makes 501 pound, 4 shillings.

		358
		14
34	l.	s.
2148	(35	8
666		1432
		358

The Totall, 501, 2 *Primes.*

At 15 pence a grosse of points, what will 2256 grosse cost. 15 Pence is 5 times 3 d. and so I divide 2256 by 8, makes 28 pound, 2 primes; which multiply by 5, makes 141 pound.

```
 61  l.   |        282
2256(28   2          5
 888                ----------
                    141|0
```

Rules of Practice by the fourth Table.

If the number of the price given bee any Aliquot part of a shilling; enter the fourth Table, and there you shall find a Divisor, by the which if you divide your number given, the Quotient will be shillings, and the remainer parts of one shilling. Then to convert your shillings into pounds, take one half of the Quotient, cutting off the lower number for shillings, and the rest is pounds.

Example.

At 3 farthings a pound Prunes, what will 756 pound weight cost. Search in the fourth Table, and you shall find 16 for your divisor: by the which if you divide 756, the Quotient is 47 shillings, 1:4, or 3 pence.

```
114  s.          1   4      s.
756(47 1:4     897652 (56103  1:4
166            166666 ----------
 1              1111   2805|3  3 d.
```

At

At 1 half penny a pound Corporas, what will 8756 pound cost. Divide by 24 makes 364 shillings, of which the one half cutting off the 4 shillings is 18 pound 4 shillings, and 20 half pence remaining, Totall is 18 pound, 4 shillings, 10 pence.

12				
1510	s.	l.	s.	d.
8756	(364	18	4	10
2444	18|4			
22				

At 4 pence a pound Licoras, what will 789 pound cost. Divide by 3, makes 13 pound, 3 shillings.

Again, at 6 pence a pound, what will 8579 pound cost. Divide by 2 makes 214 pounds, 9 shillings, 6 pence.

1 *Example.*		2 *Example.*		
1	s.	111	s.	d.
789	(263	8579	(4289	1:2 or 6
333		2222		
	13 l. 3 s.		214 l. 9 s. 6 d.	

Generall Rules of Practice without Tables.

Multiply your number given by the sum of pence, that one yard, piece, pound, or elle doth cost, and the Product will be the sum of

of pence the whole number given will cost; and then divide that summe of pence by 4, makes the Quotient Groats, and if any remain they are pence, alwayes lesse then 4 pence, or one Groat: and secondly, again, divide the Quotient will bee pounds and primes every prime in value 2 shillings, and the remainer is Groats, alwayes lesse then 6 groats or 1 prime, which invalue 2 shillings.

At 17 pence an elle Canvas, what will 3245 elles cost: Multiply by 17, makes 55165 pence, which divided by 4, makes 13791 Groats, and there will remaine one penny. Secondly, divide that quotient again by 6, makes 229 pound, 8 primes, and the remainer is 3 groats, or 1 shilling; and so the totall is 229 pound, 17 shillings, 1 penny.

Example.

3245					
17		d.			
	133	1	*Groats.*		
22715	55165	(13791			
3245	44444				
55165					
Groats					
1553	l.			s.	d.
23791	(229	8	or	17	1
6666					

At

At 3 shillings, 7 pence a yard Holland, what will 752 elles cost: multiply 752 by 43 pence, the price of one ell, makes 32336; which divided as is before taught, makes 134 pound, 14 shillings, 8 pence.

Example.

```
   752
    43
 ------
  2256
 3008
 ------
 32336
```

```
   2      Groats.
 32336 (8084
  4444
```

```
Groats
2242
8084   (134   7   8
6666
```

At 7 shillings 11 pence the elle Cambricks, what will 856 ells cost. Reduce 7 shillings, 11 pence into pence, makes 95 pence; by which multiply 856, makes 81320: which divided as before, makes 338 pound, 16 shillings, 8 pence.

Ex.

Example.

856
95 Pence.

2

4280 8 2 3 2 0 (20330
7704 4444

81320

Groats.

2352 l. | d.
20330 (338 8 8
1666

At 2 shillings 11 pence an elle of Holland, what will 7856 elles cost: multiply, and divide as is before taught, makes 1145 *li.* 13 shillings, 4 pence.

Example.

Example.

```
   7856
     35
-----------
  39280
 2356:8
-----------
 274960
```

Pence.

```
  321
 274960 (68740.
  44444
```

Groats.

```
  2344   l.   l.
 68740 (1145   6
 66666
```

At 17 shillings, 7 pence a yard Broad Cloath, what will 7856 yards cost: multiply by 211, the price of one yard, and divide as before, makes 6906 pound, 7 primes.

Example.

```
   7856
    212
-----------
   7856
  7856
 15712
-----------
 1657616
```

```
   11
 1657616 (414404
  444444
```

Groats.

```
  5 42   l.   l.   d.
 414404 (6906   7   8
  66666
```

If

If your given price have any farthings in it, then reduce your price into farthings, and multiply your given number by those farthings, and the product will be the number of farthings, which your summe will cost; then divide that product by 16, makes the quotient groats, and the remainer will be farthings, alwayes lesse then 16, or one groat. Secondly, divide that quotient of groats by 6, makes pounds and primes, as before.

Example.

At 5 shillings, 1 penny, 1 halfe penny an ounce Plate, what will 356 ounces cost. Reduce 5 shillings, 1 penny, half-penny into farthings, makes 246 farthings: by which multiply 356, makes 87576 farthings; which divided by 16, makes 5473 Groats, and 8 farthings will remain; which divide againe by 6, makes 91 pound, 2 primes, and 1 groat will remaine, totall is 91 pound, 4 shillings, 6 pence.

At 6 shillings 9 pence farthing an ounce of gilt Plate, what will 3542 ounces cost: multiply your shillings by 48, the farthings which are in one shilling, makes 288; to the which adde 37 farthings, which are in 9 pence farthing, makes 325 farthings, and then work as before is taught, and you shall finde 1199 pound, 2 shillings 3 pence, half-penny.

159

Example.

3542	*Farthings.*
325	1 11
	35724
17710	1151150 (71946
7084	16666
10626	1111
1151150	
1554	*l.* |
71946 (	1199 1
66666	

Another way to work Practice.

Divide your number of yards, elles, or pieces by 240, adding a cypher to your number given, and then multiply the quotient by your price, and the product is the summe of pounds, and shillings, that the given number will cost.

At 17 pence the ell Canvas, what will 7848 elles cost: adde a cypher, and divide 78480 by 240, and the quotient will be 32 pound, 7 primes; which multiply by 17 pence, the price makes 555 pound, 9 primes, or 18 shillings.

Ex-

Example.

			327
x			17
66			
78480	(32|7		2289
x4440			327
xx			
			555|9

At 3 shillings 5 pence an ell of Holland, what will 702 elles coſt? divide 7020 by 240 makes 2 pound, 9 primes, and there will remain 6; which multiply by 41 pence, the price of one ell, makes 118 pound, 9 primes, or 18 shillings, and then the 6 elles, makes 1 pound, 6 pence, the totall is 119 pound 18 shillings, 6 pence.

Example.

			2|9
xx 6			41
7820	(2|9		
x440			29
x			116
			118|9

s.	d.	l.	s.	d.
3	5	118	18	0
	6	1	00	6
20	6	119	18	6

12 As

At 19 pence the ell of Holland, what will 32544 elles cost: divide 325440 by 240, makes 1356: which multiply by 19 pence, the price of one ell, makes 2576 pound, 8 shillings.

```
 11                    135|6
 83                      1:9
325440 (1356          12204
244440                1356
 222                  2576|4
```

Of

The Golden Rule.

Of ſingle proportion Direct, or *the Rule of three called, the Golden Rule.*

THe Rule of three, or rule of Proportion, of all others is the moſt excellent, and therefore (not without deſert) commonly called the Golden Rule, the working is performed and proved by Multiplication and Diviſion, the uſe thereof is, the numbers or termes being given to find a fourth proportionall, all the difficulty is in the right placing the termes, for the better underſtanding of which, theſe Rules and examples following are neceſſary, as ſuppoſe 4 men ſpend a 11 ſhillings a day, how much will 8 ſpend according to the ſame proportion, place your number thus,

4 ——— 11 ſhillings.

8 ———

Then multiply the ſecond number by the third and divide the product by the firſt,

the quotient will be the number desired, that is to say, multiply 11 the second number, by 8 the third, the product is 88, as in this example,

11
8

Product. 88

Then divide the product by 4 the first number, the quotient is 22, as in this example,

88 (22 *quotient.*
44

The proportionall number desired, which place thus,

4 ——— 11 shillings
8 ——— 22 shillings.

Another way to place the term at length.

The second Example.

If 26 men make a Wall of 364 foot in a day, how many foot will 364 men make? Place your number thus,

26--364:364:

Then multiply the second number by the third, that is, multiply 364 by 364, the product is 132496, as appears in this example.

364
364

1456
2184
1092

Product. 132496

Then divide the product by the first, that is, divide 132496 by 26, the quotient is 5096 as appears in this example.

xz
65 *quotient.*
xz2496 (5096
z6266
z

So that according to the Rule of proportion if 26 make 364, 364 will make 5096, which place either thus,

26——364
364——5096 or thus, 26–364:364:5096

The third Example.

If 45 pound will pay 3560 men for one day, how many dayes will 364 pounds pay them. Multiply the second 3560 by the third 364, the product is 1295840, as in this example,

```
      3560
       364
  ---------
     14240
    21360
   10680
  ---------
Pro.1295840
```

Then divide the product of the second by the first number 45, the quotient will be 28796 and 20 pounds over-plus, as in this example.

```
      (2
   33425
   47739   quotient.
 1295840 (28796
   455555
    4444
```

So that if 45 pound will pay 3560 men for one day 362 pound will pay 28796 men for a day, and 20 pound to spare, 28796 being the fourth proportionall number or terme desired, or if the question be desired for more then one day, it is but multiplying the fourth terme by the number of dayes desired, as if 5 men make 34 pieces in one day, how many pieces will 15 men make in 12 dayes. First finde out the fourth proportionall

tionall number, and multiply it by 12, the product is the terme desired, that is, first multiply the second terme 34 by the third 15, the Product is 510, then divide the Product by the first term 5, the quotient is 102, then multiply the quotient by 12, the addition of dayes, and the product is 1224, the term desired: for the finding out the fourth proportionall number in measure, weights, time, and motion, the examples following will sufficiently demonstrate.

1. *Example.*

If 90 yards of Cloth cost 23 pound, what cost 346 yards. Multiply 356 y 23 the product is 7958, as in this example.

346
23
1038
692
7958

Then divide the Product by the first number 90, the quotient is 88 *l.* and 38:90 of a pound, as in this example.

I 5. 78

73 l.
7958(88, 38:90 of a l.
990

If 124 pound gain 37 pound, 12 shillings, what will 758 pound gain.

	37 1:2	758
	20	752
	752	116
		140
1		240
1281		355
74082	L.	356
570016(4596	112:124.	495
124444		
1222		570016
11		

How to work this last Example, and all other, after a more briefe and exact manner.

Divide the third number by the first, and by the quotient multiply the second, and the product is the answer.

Example.

If 356 elles cost 137 pound, 12 shillings, 9 pence, what cost 2848 elles?

137

	137	12	9
	8		
2848 (8			
356	1096	96	72 (6
	5	6	12
	1101	2	

Totall is 1101*li.* 2*s.* 0*d.*

First divide 2848 by 356, the quotient is 8: by which I multiply 137 pound, 12 shillings, 9 pence, the Products are 1096 pound, 96 shillings, 72 pence; then divide 72 by 12, is 6 shillings; which added to 96 shillings, makes 102 shillings, or 5 pound, 2 shillings; the totall is 1101 pound 2 shillings, as before.

Example.

If 124 yards cost 17 pound 10 shillings 1 penny, what cost 744 yards.

	l.	s.	d.
	17	10	3
	6		
744 (6			
124	102	60	6
	3		
	105	0	6

If 32 pieces of Raisons cost 19 pound, 2 shillings 2 pence, what will 112 pieces cost at that rate.

3. *Example.*

	l.	s.	d.
	19	2	7
	$3\frac{1}{2}$		
16			
32 2 ($3\frac{16}{32}$ or $\frac{1}{2}$	57	9	1:2
32	9	10	
	66	19	1:2

If 356 pieces cost 137 pound, 12 shillings, 9 pence; what will 2848 pieces cost at that rate.

```
                                  33033
                                   2848
137 12 9                          ------
 20                                20204
-----                              24404
2752                               10112
  12                               12202
-----                              20224
33032                              24404
                                   66066
                                  ------
                                  94077984
```

Example.

```
                 21
               15924
              22813720
-----------------------------------
      356 | 94077984 (264264
          | 00000000
-----------------------------------
            71264264
             2132132
               14714
                21
-----------------------------------
            94077984
-----------------------------------
```

Example.

Example.

```
 22  2          L.   |
2642640 (1101        1
2144440
 2222
```

How to know whether any question given be to be answered by the Rule Direct, or Conversed.

By these notes following, you shall find, whether any question propounded be to be answered by the Rule of 3 Direct, or Conversed; for alwayes the third number is the number whereon the question dependeth, and is distinguished from the other two, by some one of these notes following.

How much. *How wide.*
How deepe. *How long.* or such like.
How farre. *What cost.*

And the answer is alwayes, more or lesse, so that if it be more, then the lesser of your 2 extream numbers is the divisor: if lesse, then the greater of your 2 extreams is your divisor. If the number whereon the question be depending, be your Divisor, then the answer is, by the converse Rule, and you must multiply your 2 former numbers for Dividend, If the first number bee the Divisor, then

then the question is answerable by the direct Rule, and the product of the 2 latter numbers is your Dividend.

Example.

If 13 Cannons spend 358 pound of powder, what will 5 Cannons spend; now here the question is, what 5 Cannons will spend. I answer, lesse then 13 Cannons; wherefore by this rule, the greater of the 2 extreames, 13 is the divisor: wherefore I multiply 358 by 5, and divide by 13, makes 137 pound, 6:13 that 5 Cannons will spend.

1 Example.

If 13 Cannons spend 358 pound of powder, what will 5 Cannons spend.

358	1		
5	409	*l.*	
	2790	(137	9:13
1790	2833		
	22		

2. Example.

I lent my friend 115 pound for 7 months, and when I came to him to require the like kindnesse, he could lend me but 54 pound, the question is, how long he should forbear that 54 pound to make requitall, or to equall my time, and kindnesse.

If

If 115 pound require 7 months; what will 54 pound require? Here the anſwer in reaſon is, that 54 pound muſt be longer time forborne then 115 pound, and ſo the anſwer is more times then 115 pound; ſo that I find the leſſer of my extreams 54, is my Diviſor, and the queſtion anſwerable by the rule converſed, ſo that I multiply 115 by 7, makes 805; which divided by 54, makes 14 months, 49:54 of a month, or 14 months, 25 dayes, 23:25.

Example.

115	4	
7	269	*Months.*
805	805	(14 49:54.
	544	
	5	
49		
28	2	
	892	*Dayes.*
892	1372	(25 22:25;
98	544	
	5	
1372		

4. *Example.*

A Captaine of a Band of men is beſieged in a City having with him 7200 men, and his

his victuals will serve the whole Company but 7 months, and there is no hope left to have any fresh victualls untill 16 moneth; the question is, how many men hee shal send away to make the victuals serve for 16 months Answer, lesse then 7200 men.

If 7 moneths require 7200 men, how many will 16 months aske.

7200		
7	28	*Men.*
	50400	(3150
50400	x6666	
	xxx	

When Wheat was sold at 3 shillings 8 pence the bushell, the penny loaf of bread weighed 6 ounces, what shall the same loaf of bread weigh, when Wheat is sold for 2 shillings the bushell: I answer more then 11 ounces.

If 44 pence give 6 ounces, what will 24 pence give.

44	2	*Ounces*
6	264	(11
	244	
264	2	

If 356 men digge a trench in 24 dayes, in how many dayes will 200 men make the same? Answer, in more dayes; 42 dayes, 17 houres, 7: 25.

If

If 356 men require 24 dayes, how many will 200 men require.

356
24

1 *Dayes.*

1424 8544 (42 144:200
712 2200

8544

144
24

1 *Houres.*

576 3456 (17 7:25
288 2200

3456

Or thus; Considering the numbers, 200 may bee had in 356 once, therefore for 200 take 24 dayes; then for 156 take 18 dayes, totall 42 dayes; then there will remaine 6 to bee multiplyed by 24, makes 144:200 parts of a day, as before.

If 112 pound cost 3 pound, 5 shillings, 5 pence, what will 3136 pound cost; divide 3136 by 112, makes 28; which multiply by 3 pound,

3 pound, 5 shillings, 5 pence, makes 91 pound, 11 shillings, 8 pence.

	l.	s.	d
	28	28	28
	3	5	5
8 8			28
3 x 36 (28	84	11	x 40 (11
x x 22	7	140	x 2 2
22			8
	91	11	8

If 100 pound gain 7 pound, what sum of mony will gain 85 at that rate? Answer.

If 7 pound require 100 pound, what will 85 pound, require.

x x 32	l.		85
8500	(1214 2:7		100
7777			
			8500

Or otherwise, divide 85 by 7, makes 12 1:7. by which multiply 100, makes 1214 pound, 2:7 of a pound.

x x		100	
85 (12	1:7	12	1:7
77			
		1214	2:7

Or

Or otherwise divide 100 by 7, makes 14 1:7; by which multiply 85, makes 1214 pound, 2:7.

Example.

```
                                  85
                                  14  2:7
 32                              ----------
100 (14 2:7                      340
 77                              85
                                  24  1:7
                                ----------
                                1214  1:7
```

Carseys at 54 shillings the piece, are put in Barter, at 3 pound the piece, how shall Wooll worth 24 shillings the Tod, bee set in Barter, to make the bargain equall?

If 54 shillings be 60 shillings, what will 24 shillings make?

Answer, for more then 24 shillings, and lesse then 54, so that 54 is the Divisor, and multiplying 24 by 60, makes 1440; which divided by 54, makes 26 shillings, 2:3, or 8 pence.

If 54 shillings be 60 shillings, what will 24 shillings make.

```
   3                                    24
 366                          d.       60
1440 (26 36:54, or 2:3, or 8          ----
 544                                  1440
```

If

If 6 sheep cost 58 shillings, how many shall I buy for 124 pound? multiply 124 by 58, makes 7192; which divide by 6, makes 1198 sheep 2:3.

```
   124
    58
-------------
   992      1554
  620       7192 (1198 2:3
-------------
  7192      6626
```

Or otherwise, divide 58 by 6, makes 9 2:3, by which multiply 124, makes 1198 2:3, as before.

Example.

```
                    124
                      9 2:3
   4          ----------------
  58 (9 2:3       1116
   6                 82 2:3
                 ----------------
                 1198 2:3
```

A Merchant at Sivill delivereth 1500 Rialls, to receive for every 11 being a Ducat in *London* 5 shillings 10 pence sterling money, how much must hee receive?

If 11 Rialls be 70 pence, what are 1500 Rials?

```
                                  Pence.
                                   11
  474                             2387    l  |
 1500 (136 4:11                  95450(39  7
 1111          70                24440
                                  22
        952
         25
        ----                      l.    s.    d.
        9545  Totall is           39    15    5
```

At 13 pound in 100 pound profit, of what stock came 3274 pound? Answer: divide 3274 pound by 113 pound, makes 2897 pound, 39:113 of a pound, adde two cyphers to the given number.

```
  1  83
 101039        l.
 327400 (2897 39:113 of a pound.
 113333
  1111
   11
```

A Merchant received for principall and gain 328 wherein he found hee had gained clear 56 pound, what did he gain upon the 100 pound? Answer, multiply 100 by 56, the gains makes 5600; which divide by 328, and the Quotient is 17 pound, 3:41 in smallest terms.

100

```
 100
  56    2 324  l.
 ------ 5600(17.24:328,or 3:41 of a l.
5600    3288
         32
```

If 112 pound cost 7 pound, 6 shillings, how may I sell to gain 10 pound upon the 100 pound? Answer: Take the tenth part of 7 pound, 6 shillings, or of 146 shillings; which is 14 shillings, 3:5 of a shilling; which added to the price, makes 8 pound 7 pence, 1:5 of a penny.

```
 l.    s.                l.    s.
 7     6          s.     7     6
 20    146 (14 3:5       14    3:5
 ------ 110              ------------
 146                     8     00 7d. 1/5
```

Example.

If 100 pound exchange be 7 pound 2 shillings, what is one pound? Answer, 71:100 parts of a pound: wherefore multiply 71 by 240, and divide by 100, makes 17 pence. 12:5 of a penny.

```
 71
 240                    d          1/2
 ------ 17040 (17 40: 100          1
 2840   11100
 142
 ------
 17040                  71:100
```

If

If 107 ells of cloth cost 17 pound 12 shillings, what will 321 ells cost at that rate? Here if you consider the proportion between the first number and the third, you shall find the third number doth contain the first exactly 3 times; wherefore you need not to multiply the second by the third, and divide by the first number, but onely take the second number, and multiply by 3, makes 52 pound, 16 shillings for the price that 321 ells will cost: behold the work at large.

If 107 ells of cloth cost 17 pound, 12 shillings, what will 321 ells?

		321
		352
l.	s.	
17	12	642
20		1605
		963
352		
		112992

864	s.	1	l.	s.
112992	(1056	1056	(52	16
107777		220		
1000				
11				

How

How to find whether that your numbers given be proportionall, or not.

Divide your third number by the first, and if the Quotient be an even number, and nothing remain of your dividend, then the first and third numbers are proportionall in whole numbers, as in the last example, the first number was 107, and the third number 321, so that in dividing the third number by the first, the quotient is 3 and 0 remains: wherefore I conclude, that the first and third numbers are proportionals in whole numbers, and that the third doth contain the first just 3 times, and so often must the fourth number sought for, contain the second; and I conclude, that 3 times 17 pound 12 shillings, which is 52 pound 16 shillings, is the fourth proportionall number sought, as appeareth by the ordinary form of work in the last example.

	l.	*s.*
	17	12
321 (3	3	3
107		
	52	16

If 36 ells of cloth coſt 13 pound, 4 ſhillings, 1 penny, what will 432 ells coſt at that rate: divide 432 by 36, makes 12; by which multiply your ſecond number 13 pound, 4 ſhillings, 1 penny, makes 158 pound, 9 ſhillings.

	13	4	1
7	12	12	13
432 (12			
366	28	9	0
3	13		
	158	9	9

A. doth lend unto *B.* 600 pound for 8 months, the queſtion is, how much *B.* ſhall lend unto *A.* for 12 months to recompence him, not reckoning compound intereſt. Anſwer. If 8 months require 600 pound, what will 12 months require: the reaſon is leſſe then 600 pound, wherefore divide 600 pound by 12, makes 50; which multiply by 8, makes 400 pound.

Or otherwiſe by proportion, as 8 is to 12, ſo muſt 600 be to 400 pound, 2/3 parts of 600 pound.

If

If the number be not exactly proportionall, yet there is a great abbreviation to be made of the work of Reduction, Multiplication, and Division in the working of most examples in the Golden Rule; as for Example.

If 19 Barrels of Figges cost 16 pound 12 shillings, what shall 58 Barrels cost; here dividing 58 by 19, the Quotient is 3, and 1 will remain; wherefore I take 3 times 16 pound, 12 shillings, for 57 barrels, & I have to work but for the one remaining, which is but to divide 16 pound, 12 shillings, by 19, makes 17 shillings, 9:19 of one shilling, the Totall is 50 pound, 13 shillings, 9:19 shillings.

l.	*s.*				
16	12		49	16	9
3	3			17	19
49	16		50	£13	9:19

If 356 ells of Holland cost 124 pound, 2 shillings, 3 pence, what will 7259 ells cost at that rate. Reduce 124 pound, 2 shillings 3 pence, into pence, makes 29787 pence: which multiply by 7259, makes 216223833

pence, which divide by 359, makes 607370; which divided by 240 pence, makes 253 pound, 170 pence, or 14 shillings 2 pence.

Example.

l.	*s.*	*d.*
124	2	3
20		
2482		
12		
4967		
2482		
29787		

29787
7259

64549453
14396136
111602
48447
14353
056
181
8

216223833

2291

```
                 1251
                263101          d.
356 | 216223833  (607370
    | 0000000
    21360282
      24969
       104
        2
```

216223833 *The Proof*

```
1201          l.  52   s.   d.
607370  (2530  170  (14    2
244440          122
 222             1
```

A second way more briefly to work this question, or any other of like nature, is this: multiply the third number by the pounds and primes, or shillings and pence, and divide the Product by the first number, and the Quotient will bee the fourth number sought. In the last example; 7259 ells was the third number, which multiply by 124 *l.* 1 prime, or 2 *s.* makes 900841 *l.* 9 primes:

then alſo 7259 by 3 pence, makes 21777 pence; which divided by 240 makes 90 pound, 14 ſhillings, 9 pence; then adde thoſe two ſums into one Totall, makes 900932|6 primes, 9 pence; leave out 9, and then divide the reſidue by 336, makes 2530 pound, 7 primes, and 54:356; which with the 9 d. brings out the two pence, as in the laſt example.

Example.

7259
1241

7256
29036
14518
7259

900841|9 d.
907 9

900932|6

7259

d.	d.	l.	
7259	1339		
3	217770	(50	7
	24440		
21777	22		

Primes.

	l	
10		
1882534		
9009326	(2530	7
3566666		
35555		
333		

If 24 pieces of Raisons cost 25 pound, 8 shillings, what will 324 pieces cost? multiply 324 by 25 pound, 4 primes, makes 8229,6 primes: which if you divide by 24, the Quotient will be 342 pound, 9 primes, or 18 shillings without Reduction, as in the example following.

Example.

```
   324
   254
-------
  1296          2
 1620          10610     l   s
 648           82296 (342    9
-------         24444
 82296           222      or,
                        342 l. 18 s.
```

If 25 pound gain 1 pound, 8 shillings, what will 725 pound gaine at that rate? Multiply 725 by 1 pound 4 primes, makes 10150; which divided by 25, makes 40 pound, 6 primes, or 12 shillings.

```
   725
    14                  l    1
-------        10150 (40    6
  2900          2555
   725           22
-------
 10150
```

And

And in this sort may divers other questions bee wrought in pounds and shillings without Reduction, which I thought good to give a taste of, but I will proceed here no further, because I purpose in the second part of this Book to speak of them at large in the Treatise of *Decimal Arithmetick*, whereby all manner of questions are to be wrought by Multiplication and Division in pounds, shillings, and pence, without Reduction, as shall appear in their severall places following. And now I will proceed to speak something of the Rule of Three Direct and Converse in Fractionall operations, wherein I will be as brief as I may, not intending to increase this little Treatise intended for a pocket book, into over large a volume.

The Rule of 3 in Fractions.

If your 3 numbers given be all Fractions, multiply the third by the second, and divide the Product by the first, and the Quotient will be the fourth proportionall number sought for.

Example.

If 3:4 of a yard of Holland coſt 4:5 of a pound, what ſhall 5:6 of 1 yard coſt at the rate? Multiply 5:6 by 4:5, makes 20:30 or 2:3, which divide by 3:4, makes 8:9 of one pound, or 17 ſhillings, 7:9 of one ſhilling.

20	8
4:5	2:3
5:6	3:4
30	9

If 7:8 of one elle of cloth coſt 9:12 of a pound, what will 17 elles coſt? Make 17 fraction-wiſe, and multiply 17:1, by 9:12, makes 153:12. which will be both abbreviated by 3, makes 51:4, which divided by 7:8 makes 408:28 parts of a pound, or in ſmaller terms 102:7; then divide 102 by 7, makes 14 pound, 4:7 of one pound for the price.

153	408	1	
17 : 1	51 : 4	126	*l.*
9 : 12	7 : 8	408	(14 4:7
12.	28	288	
		2	

2 *Rule.*

2 *Rule.*

If all your 3 numbers given be Fractions, multiply the Numerator of the first fraction by the denominator of the other 2 fractions, for to make your Divisor. Then Multiply the Denominator of your first Fraction by the Numerators of your other 2 Fractions, to make your Dividend, and then divide by your Divisor, and the quotient is the answer sought: but if your Divisor be greater then your Dividend, then the quotient is a fraction lesse then a unite.

Example.

If 3:4 of a yard cost 4:5 of a pound, what cost 56 of a yard? Multiply 3, the Numerator of the first Fraction by 5 and 6, the denominators of the other two Fractions, makes 90 for your divisor; then multiply 4, the Denominator of your first fraction by 4 and 5, the Numerators of your other two fractions, makes 80 for your dividend: now because your Divisor is greater then your Dividend, place them Fraction wise thus, 80:90 of 1 *li.* or in least termes; 8 9 of a *li.*

Ex-

Example.

90

If 3 : 4 of a yard
coſt 4 : 5 of a pound } makes 8 : 9
what 5 : 6 of a yard
80

Again, if 7:8 of an elle coſt 2:3 of a ſhilling, what will 34 ells coſt.

21

If 7 : 8 of an ell,
coſt 2 : 3 of a ſhill.
what 34 : 1 ells coſt.
16

204
34

544. or 25 *s.* 19:21 of a *s.*

If 8 Pioners in 3:5 of a day doe make 22 Rods of Baricadoe, what will they make in 7 dayes.

If

3
If 3:5 of a Day
make 22:1 of a Wall,
what 7:1 of a Day?
770

222 Rods. Rod.
770 (256 2:3
333

If 12 hundred 3:7 of Allum cost 15 pound 1:3 *li.* what will 324, 1:8 of a hundred cost? Reduce the whole and broken numbers into broken, and work as is before taught.

12 6:7 15 1:3 324 1:8
7 3 8

87 : 7 46 : 3 2593 : 8

28

2088 20863
If 87:7 208524 *li.*
cost 46:3 8349946 (399 [illegible]
what 2593:8 208888
8349946 20888
20

If

If 7:9 of an ell coſt 8:11 of a pound, what will 15:13 of an ell coſt? 1 pound, 1 ſhilling, 6 pence, 3:4 *fere*.

Example.

1001
7 : 9
8 : 11
15 : 13
1080

77
13
231
77
1001

72
15
360
72
1080

79 *l.*
1080 (1
1001

l.
79 : 1001

1*l.* 1*s.* 7*d. fere.*

If 3:4 of a yard of Velvet coſt 7:8 of a pound, what will 28 yards coſt. 32*l.* 13*s.* 4*d.*

Example

Example.

24
3:4
7:8
28:1
784

28
28
224
56
784

1
66 *l.*
784(32 2:3 of a pound.
244
2

If 3 ells 1:8 coſt 5:7 of a pound, what wil the whole piece coſt, containing 28 elles 1:2 at that rate? Anſwer.

350
25:8
5:7
57:2
2280

1 *l.*
2280 (6 18:35
350
or 10*s.* 3*d.* 3:7 of 2*d.*

If

If 12 pound, 4 ounces of Quichanella cost 4 pound 3 shillings 4 pence, how much will 100 pound buy me at that rate? If 49:4 of a pound cost 25:6 of a pound sterling, what will 600:6 parts of a pound buy? Answer.

	600		
If	25:6 of a pound	52	l.
buy	49:4 of a pound	176400	(264
what	600:6 of a pound.	66600	
	176400		

The proofe of this last example. If 100 pound sterling buy me 294 pound of quichanella, how much shall 4 pound 3 shillings 4 pence buy me? To find the value of the hundred, the rate of one pound being given; abate 2 places from 294, and it will be 2 pound 94:100 parts of one pound: which multiply by 4 pound, 1:6, makes 12 pound 25:100 parts, or one fourth, for the proofe.

l. 12		l. 1:2
2:94	5	11:76
4 1:6	294 (49	49
	66	
1176		12 2:5

If

If 30 men cast a Trench in 3 dayes 2:3, how many men would cast it in 5:6 of a day? here by comparing these proportions together, I finde that 5:6 the third number, will desire a greater quantity of men to perform the work, then 11:3 of a day will require; wherefore this propottion is reciprocall or backward; wherefore I multiply the 2 former numbers together, makes 330:3, or in smaller termes, 110:1, which divided by 5:6, makes 660:5; which divide by the denominator 5, makes 132 men.

330	660.	22 Men.
11:3	110:1	660(132
30:1	5:6	22
3	5	

In the Backward Rule, or Converst in fractions, multiply the denominator of your third number by the Numerators of both your other numbers for dividend; then multiply the Numerator of your third number by the Denominators of your other 2 numbers for Divisor, and then work as before.

Example.

Example.

1980

If	11:3 of a day	43	*Men*
give	30:1 men,	xx980	(132
what	5:6 of a day.	xxxx	
	15	xx	

If when the Buſhell of Wheat was ſold for 4 ſhillings, the penny loafe weighed 6 ounces 1:2, what ſhall the ſame loafe weigh when Wheat is ſold for 2 ſhillings, 8 pence the buſhell? Multiply 48 by 13, makes your dividend 624, then 2 by 32, makes 64 for your Diviſor, and then divide 624 by 64, makes 9 ounces, 48:64, or 3:4 of an ounce.

624

If	48:1 pence	48	*Ounces.*
gives	13:2 ounces	624	(9. 3:4
what	32:1 pence.	64	
	64		

If when one ounce of ſterling ſilver was worth 1:4 of a pound the penny of ſilver weighed 30 graines, what ſhall the ſame penny weigh, when the ounce ſhall be worth 1:3 of a pound.

Example.

Example.

90
If 1:4 of a pound 22 *Graines.*
give 30:1 graines, 90 (22 1:2
what 1:3 of a pound. 44
4

If when a load of Hay was sold for 24 shillings 8 pence, the penny bottle weighed 3 pound, 1:4, what shall it weigh now the load is sold for 37 shillings? Answer, 2 pound 71:76 of a pound.

1040
If 80:3 shillings 152 *li.* *li.*
give 13:4 pound 1040 (2 71:76
what 37:1 shillings 444
444

If 3 yards 1:8 cost 9 shillings, 9 pence, what will 380 yards cost at that rate? Reduce 3 yards 1:8 into eights; makes 25:8, then reduce 380 yards into eights, makes 3040:8 parts; then 9*s.* 9*d.* into pence, makes 117 pence; by which multiply 3040, makes 3556800, which divided by 25, makes 14227 pence, 5:25 of one penny,

in

in the whole 59 pound, 5 shillings, 7 pence, 5:25 or 1:5 of a penny. Behold the worke,

yard.		*s.*	*d.*	
3	1:8	9	9.	380
8		12		8
25		117		3040
				117
				21280
				3040
				3040
				355680

1d.						
60	*l.*		*d.*	*s.*	*d.*	
242270	(59	2	19	or 5	7	[1:5
24440						
22						

The proofe of the former worke. If 380 yards cost 59 pound, 5 shillings 7 pence 5:25 of one penny, what will 3 yards 1:8 cost at that rate? reduce your coyne into 25, makes 355680; then reduce your 380 yards into 8, makes 3040; by which di-

vide

vide 144227 pence, makes 9 ſhillings, 9 pence, as before.

14227	59	5.	7	5:25
25	20			
71140	1185			
28454	12			
355680	2377			
	1185			
	14227			

3 2	d.		
5 2 2	9	s.	d.
355680	(227	(9	9
30 4000	12		
3044			
30			

If 34 Ship Carpenters build a Ship in 8 months 3:5, in how long time will 120 Carpenters build the ſame? Reduce 8 months 3:5 into fifths, makes 43:5; then multiply 34 by 43, makes 1462. Alſo put your diviſor 120 into fifths, makes 600:5; then dividing of 1462 by 600, the quotient will be 2 months 262:600 parts of one month, or in ſmalleſt terms 131:300 parts. And this Rule general if one of your numbers be a fraction put alwayes your diviſor into the ſame fraction of your dividend, and the quotient wil

be

be of the ſame denomination of your divi-dend, and ſo the anſwer was months, and parts of a month.

If 34 Carpenters aske 43:5 months, what 600:5 month.

34		
43		
	2 *months.*	*month.*
102	2462 (2	131:300
136	600	
1462		
months.	*dayes.*	*of a day*
makes 2	12	68:300

If 100 pound in 12 moneths gaine 10 pound, what will 336 pound gaine in 8 months? Take the tenth part of 336, which is 33*li.* 6 primes, or 12*s.* makes 369*li.* 12*s.*

Secondly, if 12 months gain 33 pound 6 primes, what will 8 months gain? I anſwer leſſe then 33*li.* 6 primes; wherefore multiply by 8, and divide by the greater extream, 12, makes 22 pound, 4 primes or 8 ſhillings, the anſwer.

If 120 Pioneers in 6 dayes caſt 300 rods of Trench, how many ſhall 600 men caſt up in 4 dayes? If 120 give 30, what will 600 give? Anſwer, 1500 Rods.

Secondly,

Secondly, if 6 dayes give 1500 rods, how many will 4 dayes give? I answer, lesse: multiply by 4, and divide by 6, makes 1000 rods.

If 112 pound in 12 months gaine 100*li.* what will 340*li.* gain in 7 months? Answer; 303*li.* 4:7.

Secondly, if 12 months gaine 303*li.* 4:7. what will 7 months gaine?

Example.

	7			
		8		
12	2125	6497	*li.*	*li.*
7	7	14875	(177	11:1
		8444		
84	14875	88		

A generall Rule.

Put alwayes your Divisor into the same Fraction of your dividend, and your quotient will be of the same denomination, that your Dividend was: as in the last example, 12 months was turned into sevenths, and also 303*li.* 4:7 was turned into sevenths of pounds, and so the quotient of that division was pounds and the fraction of a pound remaining.

If 7 pound in 12 months gain 3 pound, in how long time will 340 pound gain 60*li.*?

First, if 7 pound gain 3 pound; what will 340 pound

pound gaine, makes 145 pound, 5:7 of a pound. Secondly, if 145 pound, 5:7 or 1020:7 ask 13 months, what will 60 pound, or 420:7 gain. Multiply by 13, and divide by 1020, makes 5 months 6:7 of a month.

If 600 great Horſes in 5 daies do ſpend 1125 buſhels of oats, how many buſhels will ſerve 1400 Horſes for 22 daies. Firſt ſay, if 600 give 1125, what 1400, makes 2625 buſhels. Secondly, if 5 ſpend 2625 buſhels, what will 22 daies ſpend? Multiply by 22, and divide by 3, makes 11550 buſhels.

How to work the double Rule at one operation.

This laſt queſtion, or any other of like nature, which is wrought by the double Rule at 2 ſeverall operations, may be anſwered at one in this manner: multiply the three latter numbers, to make your dividend one into the other; then multiply the 2 former numbers for to make your diviſor, and then divide the dividend by the diviſor, and the quotient will be the ſame, as in the laſt Example, 1125 being multiplyed by 1400, makes 1575000; which again multiplyed by 22 makes your dividend 34650000. Then multiply your 2 former numbers 600 by 5, makes 3000 for the Diviſor; and then dividing your dividend by your

Diviſor

Diviſor 3000, the quotient will be 11550 buſhels, as before at two operations.

Example.

1125
1400

4500 600
1125 5

1575000 3000
22

3150
3150

34650000

	Buſhels.
34650000	(11550
33333000	

If 35*s.* in 7 months gain 6*s.* in how long time will 340*l.* gain 100*l.* Firſt, if 35*s.* gain 6*s.* what will 340*l.* require? Reduce 340*l.* into ſhillings, and multiply by 6, makes 40800; which divided by 35, makes 1165 *s.* 5:7 *s.* Secondly, if 1165 *s.* 5:7 require 7 months, what will 100*l.* require? Makes 12 months, 8:816 parts of a month.

Fellowſhip without Time.

This Rule differeth very little from the

Rule of three, for in this Rule the sum of all the monies disbursed, is the first number in the Golden Rule. Then the gains or losse is the second number: the third number is each severall partners money disbursed: so that the Rule must be severally wrought for each severall partners portion.

Example.

Four Merchants made a company together; the first, *viz.* *A.* put in stock 74 pound, *B.* put in 90 pound, *C.* put in 100 pound, and *D.* put in 120 pound, and they found that they had gained 84 pound; now the question is, what each man must have of the gaines, according to the proportion of his money disbursed. First, adde all the monies disbursed into one totall sum, *viz.* 74:90, 100, 120. Totall is 384 for the first number in the Golden Rule. Then the second number is 84 pound, the gains; and the third number is each particular mans stock: then work as followeth.

Example.

If 384 pound gaine 84 pound, what will *A.B.C.D.* summes gaine to them?

A.	74	16.	72
B.	99	19.	264
C.	100	21.	366
D.	120	26.	96

2

The proofe 384. 84. 768 (2
384

The like reaſon is in loſs, as is in gains. Example: A certain Ship being in a tempeſt on the Sea, was forced to caſt over-board ſo much of her lading, as amounted unto the ſum of 642*li.* then there is great reaſon that all the Venturers ſhould bear part of that loſſe, according to the proportion of his ſtock which he ventured. As ſuppoſe, *A.* ventured 700 pound, *B.* 530 pound, *C.* 640 pound *D.* 800 pound, total is 2670: then ſay, if 2670 pound loſe 642 pound, what will each of *A.B.C.D.* loſe? as in the example following.

Example.

If 2670 pound loſe 642 pound, what will *A.B.C.D.* ſummes loſe to them?

A.	700	168.	84	
B.	530	127.	117.	267
C.	640	153.	237	
D.	800	192.	96	

2

The proof. 2670 642 534 (2
267

Four Merchanes bought a Ship, which coſt them 3600 pound, whereof *A.* muſt pay one third part of the money, *B.* one fourth, *C.* one fifth, *D.* one ſixth: the queſtion is, what each man muſt pay of the ſaid ſum. *Anſwer,*

Seek a number wherein the like parts may be had, which is 60, and take the like parts of that number for the numbers that you ſeek, for to finde each mans portion of the money which he ſhould pay. Firſt 1:3 of 60 is 20, the 1:4 is 15, the 1:5 is 12, the 1:6 is 10: which adde into one total, makes 57 for the firſt number in the Golden Rule.

Example.

Of 60
1:3 is 20.
is 15.
is 12.
1:6 is 10.
totall is 57

If 57 be 3600, what will be the ſums of *A. B. C. D.*

A.	20	1263	9	
B.	15	947	21	
C.	12	757	51	57
D.	10	631	33	
		2		

The proofe, 57 3600 | 114 (2
| 57

The ſaid Ship made a Voyage to Sea, and hath gotten all charges, deducted out 240 *li.* the

the queſtion is, what each man muſt have of the gains.

Anſwer.

If 57 gaine 240, what will *A. B. C. D.* ſummes gaine to them.

A.	20	84	12	
B.	15	63	9	
C.	12	50	30	57
D.	10	42	6	

1

The proofe. 57 | 240 | 57 1
57.

Four Merchants made a company; *A.* put in 320 pound, 13 ſhillings, 3 pence; *B.* put in 840 pound, 16 ſhillings, 6 pence; *C.* put in 560 pound 18 ſhillings 9 pence; *D.* put 1000 pound: and in one year they found they had gained 4000 pound, 18 ſhillings 6 pence: the queſtion is, what each man muſt have of the gaines. Firſt, the totall ſum of all their moneys makes 2721 pound, 8 ſhillings, 6 pence, or 653142 pence, for the firſt number. Then reduce each ſeverall mans money diſburſed into pence for the third number, the ſecond is the gaines alſo reduced into pence, and then work according to the Rule.

Example.

If 2721 pound, 8 ſhillings, 6 pence gaine

400 pound, 18 shillings, 6 pence, what will *A.B.C.D.* summes gaine to them.

	d.	*li.*	*s.*	*d.*
A.	76931 makes	57	2	1
B.	201798 makes	123	17	3
C.	164525 makes	82	12	9
D.	240000 makes	147	6	5
The proofe		400	18	6

Rules of Fellowship, with diversity of Time.

Multiply each mans money disbursed by the time that it continued in stock, and gather the totals, as in the last Rule, to make the first term in the Golden Rule, and the gaines or losse is the second, and then each mans Product of money and time for the third term in the Golden Rule, and worke as followeth.

Example.

Three men made a stock, *A.B.* and *C.* and in long continuance of time by dangerous adventures they gained, and got by prizes taken at Sea, 2345 pound; *A.* put in stock 40*l.* 14 months; *B.* put in 50*l.* 8 months; *C.* put in 85*l.* 6 months, what shall each man have of this gaines?

Example.

Example.

	l.	*months*		*l.*	*months*		*l.*	*months*
A.	40	14	B.	50	8	C.	85	6
	14			8			6	
	560			400			510	

If 1470 pound gaine 2345 pound, what will *A.B.C.* summes gaine them?

A.	560	893.	7	
B.	400	638.	2	21
C.	510	813.	12	
		1		
	1470	2345		21(1
				21

The second question with more diversity of time, four Merchants made a Company; *A.* put in 340 *li.* 19*s.* 2*d.* for 10 months; *B.* put in 930*li.* for 9 months: *C.* put in 760*li.* for 12 months; *D.* put in 583*li.* 13*s.* 4*d.* for 5 months, wherewith they gained 740*li.* now the Question is, to know what each man must have of this gaines.

Example.

	li.	s.	d.	months.
A.	340.	19.	2.	10.

20

6819

12 d.

13640

6819

81830

10 months.

818300

B 930 li. 9 months.

9

8370

240

334800

16740

2008800 pence.

C. 1760 li. 12. months.

240

30400

1520

182400

12 months

2188800

D. 583

D. 583 *li.* 13 *s.* 4 *d.* 5 *months.*

20

11673

12

23350

11673

140080

5 *months.*

700400

A.	8183	00
B.	20088	00
C.	21888	00
D.	7004	00

5716300.

Cut off 2 Cyphers from each number, and then work as followeth.

If 57163 pence gaine 1776 pence, what will A.B.C.D. summes gaine them.

		l.	*s.*	*d.*	*d.*
A.	8183	105	18	7	4:5
B.	20088	260	00	11	3:5
C.	21888	283	6	11	4:5
D.	7004	90	13	4	4:5
			3	3	
The proofe.	57163	740	00	0	15:5

5(8

There is a booty or ſpoil taken by 3 men worth 7851 pound, and they agree to divide it in this ſort; *A*, is to have 1 half, *B*. 1 third, C. 1 fourth, what is each mans ſhare.

To work this queſtion, and all other of like nature, ſeek a number which may be divided by all the Denominators of your 3 fractions in whole numbers, and the ſmaller ſuch a number be that you chooſe, the more eaſie will your work be; which for to finde, multiply your denominators of your fractions one into another: that is to ſay, 2 by 3 makes 6; and 6 by 4 makes 24, ſo 12, one halfe of 24 will be evenly divided by all the 3 denominators, 2, 3, and 4. Wherefore I take 1:2 of 12 is 6, and 1:3 of 12 is 4, and 1:4 of 12 is 3, which added into one ſumme, makes 13 for the firſt number in the Golden Rule; the ſecond is 7851 pound, and the third numbers are each ſeveral mans portion imagined to be, *viz.* 6 4 3, and then work as before.

If 13 give 7851 pound, what will *A.B.C.* ſummes give. *li.*

A.	6	3623.	7	
B.	4	2415.	9	13
C.	3	1811.	10	

2

The proofe | 13 | 7851 26 (2

Example.

Four Merchants bought a houſe together, which coſt 3000 pound; *A.* was to pay 1:2 and 6 pound overplus; *B.* 1:3 and 12 pound more; *C.* 8 pound leſſe then 2:3; *D.* 1:4 with 20 pound overplus. Now the queſtion is, what each Merchant muſt pay of this ſum. Anſwer, Firſt the pounds overplus, muſt be ſubſtracted from the ſumme given; and the pounds wanting muſt be added to the ſum given; as for *A.* 6 pound, for *B.* 12 pound, for *D.* 20 pound, totall is 38 pound to be ſubſtracted; then for *C.* adde 8 pound, therefore ſubſtract 30 pound from 3000 pound, there will remain 2970 pound; then work by the Rule of Fellowſhip, taking 12 for a number, which will be divided by all the denominators, 2, 3, and 4, *viz.* take for A. 6, for B. 4. for C. 8, for D. 3, totall is 21 for Diviſor, the ſecond number is 2970 pound, the third each mans part imagined.

Example.

If 21 give 2970 pound, what will *A. B. C. D.* ſummes give?

A.

A.	6	848	4:7	854	4
B.	4	565	5:7	577	5
C.	8	1131	3:7	1123	3
D.	3	424	2:7	444	2
		2		2	
	21	2970	24(2	3000	24(2
The proofe.		7		7	

The numbers found to A, are 848 pound 4:7, to which if you adde 6 pound, make 854 pound, 4:7.

To B. 565 pound, to which 12 pound added, makes 577 pound, 5:7.

To C. 1131 pound, 3:7, from which subtract 8 leaves, 1123 pound, 3:7.

To D. 424 pound, 2:7, to which adde 20 pound, makes 444 pound, 2:7, the which added into one totall, makes 3000 pound, the proofe.

And in this manner may infinite variety of questions be propounded, and their doubts easily resolved; and here will I end concerning this Rule, and goe in hand with some pleasant questions to be wrought by position, which is the most excellent Rule of all others in Arithmetick, as shall appear in the second part of this Book in Decimall Arithmetick.

Positi-

Position.

The Rule of Position requiring one number to be imagined before the principall proportion can be found.

TO work by this Rule; Take any number at pleasure, which you shall imagin to be the true number sought, and proceed with it, as if it were the true number, wherein if you have failed, by doubling or tripling according to the nature of the question, you shall then attain nnto the true number desired by aid of the Golden Rule, in manner following: for look what proportion is between the false conclusion, and the false position, such proportion hath the given number to the number sought.

Example.

A.B and *C* consent to buy a ship, which will cost them 2700 pound, so that *B.* must pay twice so much as *A.* and *C.* must pay 4 times so much as *B.* the question is, what each man must pay of this sum? I suppose *A.* must pay 8 pound, then *B.* must pay twice as much as *A* which is 16 pound; then *C.* must pay 64 pound, which is 4 times as much as *B.* but yet 8 pounds, 16 pound, and 64 pound,

is

is but 88 pound, and it ſhould bee 2700 pound, ſo that now I reſort to the Golden Rule, and work as followeth. If 88 pound come of my poſition 8 pound, of what comes 2700? Multiply 2700 by 8, and then divide by 88, makes 245 pound, 40:88, or 5:11 of a pound for the part that *A* muſt pay; then *B* muſt pay 490 pound, 10:11 of a pound which is twice as much as *A*; and *C* muſt pay 1960 pound, 40:11 of a pound, which is 4 times as much as *B*. The totall ſum is 2700 pound. Behold, work as followeth.

If 88 pound come of 8 pound, of what comes 2700.

44
4080 *l.*
21600 (245. 40:88, or 5:11
8888
88.

2700
8

21600

2 *Example*

A Captain of a Band of Men being asked, what number of Souldiers were in his Band, anſwered, I do not readily know; yet (quoth he) of this I am certain, that the 1:2 and 2:3, and 4:5, and 1:6 of their number added together into one ſum, are 384 men: now the queſtion

question is, what sum of men he had in his Band. I suppose he had 60 men or 30 men in his Band, but the least number is best, *viz.* 30, whereof 1:2 is 15, and 2:3 is 20, and 4:5 is 24, also 1:6 is 5, their totall is but 64 men, but that should be 384 men. Then say by the Golden Rule, as followeth.

If 64 come of 30, of what number comes 384.

384	*men.*
30	64)11520(180
11520	64
	480
	448
	320
	320

Answer: he had 180 men in his Band, whereof

1:2	is	90 men,
2:3	is	120
4:5	is	144,
1:6	is	30.
Totall is		384 *men.*

The solution of this question another way more brief.

Divide 384 by 64, makes 6; which multiply by 30, makes 180 men, as before.

3 *Example.*

A certain man having spent [illegible] pound, had

had yet remaiuing 1;2 and 1:3 of his whole substance; the question is, what his substance was. Answer: First, 1:2 and 1:3 is 5:6, which being taken from 6:6, the whole substance leaves remaining 1:6; therefore if 1:6 be 40 pound, what is 6:6? makes 240 pound.

li.
40
6
———
240

4 *Example.*

A Merchant bought 384 yards of broadcloth of 3 several prices, of each a like quantity, & he was to pay half as much more for the second sort, as he payed for the first, and twice as much for the third sort, as he payed for the second: now the Question is, what each sort cost him, and at what price every yard was rated unto him. I suppose the first sort cost him 4 pound, then the second sort must cost him 6 pound, which is half as much more as the first, and then the third sort cost him 12 pound, which is twice as much as the second; the totall is but 22 pound, but it should be 248 pound, wherefore if 22 pound come of 4 pound, of what number comes 248 pound?

and page in all the sum of 248 l. Example.

Example.

x x			248 *li.*
9 9 x	(45	1:11	4
3 3 x			
x			992

The first cost him 45 pound, 1:11 of a pound, then the second sort cost 67 pound, 7:11 of a pound; the third sort cost 135 pound, 3:11 of a pound, totall is 248 pound; then divide 384 by 3, and you shall find he had 128 yards of each sort, and by practise, you shall find the first sort cost 7 shillings, 1:2 *d.* a yard, the second sort cost 10 shillings 7 pence a yard almost, the third sort cost 21 shillings, 1 penny, 1:2 *d.*

Double Position.

The Rule of Double Position.

SUppose a number at pleasure as in the last Rule of single Position, and proceed as if you had found the right number, and if by working you find the true number, then your Position was the right number, which doth seldom happen. First, if by your working there cometh out more then the true num-

ber

ber, then note it thus -|- with a Croſs; if leſs, then thus —— with a long line, which doth ſignifie leſs.

Secondly, ſuppoſe another number, greater or ſmaller, and work as before, until you do find the true number ſought; which if you do not find, ſet the difference alſo from the true number ſought, and note it with the ſign -|- or —— as it ſhall be found.

Then thirdly, ſet your ſuppoſitions with their errors, more or leſs, as in the examples following.

Fourthly, multiply croſs the firſt poſition by the ſecond error, and the ſecond poſition by the error of the firſt, and then if the ſigns be both alike -|- or —— abate the leſſer from the greater, and the remains ſhall be the Dividend. Alſo the leſſer error abated from the greater, leaves the Diviſor; but if the ſigns be contrary one -|- the other leſs, add both together to make the dividend, and add the two errors to make the diviſor: and laſtly divide the Dividend by the Diviſor, and the Quotient is the true number deſired.

1 *Example.*

A certain man ſeeing a purſe in his friends hand, ſaith unto him: It ſeemeth unto me, that there is 100 Crowns in your purſe. To whom

whom the other answered: Nay (quoth he) there are not 100 Crowns, but (saith he) if they were increased 1:2, and 1:3, and 1:4, and lastly, one Crown overplus, then would they be just 100 Crowns.

I suppose there were 12 Crowns in his purse, to which if I add one half, of 12, which is 6; and one third of 12, which is 4; and one fourth of 12, which is 3; and lastly, one Crown more, the Totall will be but 26 Crowns, but they should be 100 Crowns, so that this error is too little by 74 Crowns, which I note thus:

74——12

Secondly, I suppose he had 24 Crowns, to which I add 1:2 of 24, which is 12, and 1:3, which is 8 and 1:4, which is 6: and lastly, one Crown overplus, the totall is 51, but it should be 100 Crowns, so that this is an error of 49, too little, which I also note thus:

49——24

588		74	49
748	12	24	12
49	24		
1776		296	98
588		148	49
1188		1176	588
74		113	
49		1188 (47	13:25
		255	
25		2	

The answer is; that hee had 47 pound 13:25 parts of a pound in his purse. The proof followeth.

1:2 of 47 *li.* 13:25 of a *li.* is	13:19	
1:3 is	15:21	25
1,4 is	11:12	
and one Crown overplus is	1:00	
	47:13	

2 *Example.*

Twenty yards of Sattin, and 12 shillings is equal unto 12 yards of Velvet less, 10 shillings; the price of either sort is required.

To answer this, or any other like question, take any number for the price of a yard of

of the leſſer number, which here is Velvet, which at 20 ſhillings a yard, leſs 10 ſhillings, amounteth unto 230 ſhillings. Now admit a yard of Sattin at 14 ſhillings, ſo 20 yards and 12 ſhillings amounteth unto 292 ſhillings; from which ſubſtract 230 ſhillings, reſts 62 ſhillings more then the truth. Again, rate a yard at 12 ſhillings, ſo the 20 yards and 12 ſhillings, makes 252 ſhillings; from which take 230 ſhillings, reſts, 22 ſhillings more then the truth alſo. Now multiplying 22 by 14, and 62 by 12, the Products are 308, and 744, and the difference of thoſe numbers is 436, then take 22 from 62, reſts 40 for diviſor, by which divide the difference, makes 10 ſhillings, 9:10 ſhillings for the price of a yard of Sattin.

Example.

62
22 12
14
124
88
22 62
308 744
308
436

Difference.

14 | 62 *Diviſor.*
2 40
12 | 22

	s.	s.
436	(10	9:10
440		

3 Example.

Otherwaies if 40, the difference of error gain 2, the difference of positions, then 60, the first error yeelds 3 and 1:10.

Or if 40 yeeld 2, what 22? makes 1 and 1:10; this taken from 12, or 3, 1:10 from 14, leaves 10, 9:10 for the price, as before.

4 Example.

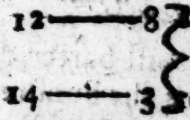
A Carpenter was hired to work 20 dayes at 12 pence a day, but every day that he was idle, he was to abate 18 pence of his wages, and in the end hee received but 8 shillings: now the Question is, how many dayes hee wrought.

First, suppose he wrought 12 dayes, which cometh to 12 shillings, then must the 8 dayes that he played, come to 12 shillings at 18 pence a day also: but this Question saith, there came due to him 8 shillings Behold an error of 8 shillings too little.

Again, I say that he wrought 14 dayes, amounting to 14 shillings: the 6 dayes that he played at 18 pence a day, cometh to 9 s. this taken from 14 shillings, leaves 5 shillings, and it should be 8 shillings, which is an error of 3 shillings too little. Now multiplying 12 by 3, and 14 by 8, the Products

are

are 36, and 112, and the excesse is 76; which being divided by 5, the difference of the errors, quoteth out 15, 1:5 for the number of working dayes, and 4 dayes 4:5 for the number of playing dayes.



Otherwayes.

If 5, the difference of errors yeeld 2: the difference of positions, what 8 the first error? makes 3, 1:5 to be added to 12.

Or if 5 be 2, what is 3? makes 1, 1:5 to be added to the second position 14, whereby all three wayes, the number of the dayes he wrought are found out.

Barter or Exchange.

TWo men barter, one hath Ginger of 10 pence a pound ready mony, and in barter he will sell it for 12 pence a pound. The other hath Sugar of 12 pence a pound ready mony, but in barter he will sell it for 14 pence a pound: the Question is how much Sugar will pay for 756 pound of Ginger?

First,

First, put your price of your Ginger into pence, makes 9072 pence which divide by 14 pence, makes 648 pound of Sugar, which muſt be given for 756 pound of Ginger at 12 pence the pound.

12 *Example.*

Two Merchants will barter, one hath rayſons of 34 ſhillings the hundred ready mony, and in barter hee will ſell them for 40 ſhillings: the other hath Nutmegs of 4 ſhillings the pound ready mony, how ſhall he ſet his Nutmegs to make the like profit? Put your coyn into pence, and ſay; if 408 pence be 480 *d.* what is 48 *d.* Multiply 480 by 48, and divide by 408, makes 56 *d.* 24:51 of one penny for the price of the Nutmegs; *viz.* 4 *s.* 8 *d.* 1:2 of a pound.

3 *Example.*

Two Merchants wil barter, one hath Holland of 2 ſhillings 7 *d.* the ell ready mony, which he wil ſel in barter for 2 ſhillings 10 pence the ell, and yet he will gain privately 10 *li.* in 100 pound over that gain; at what price muſt he then ſet his Holland? Anſwer: ſet down 2 ſhillings, 10 pence, in pence, makes 34 pence; of which take the tenth part, which is 3 pence, 4:10, or 2:5, and adde

adde to 34 pence, makes 37. pence 2:5 of a penny for the price to sell one ell to make that gains. Now the other Merchant hath wool at 7 shillings a Tod ready mony, how shall hee sell his wooll to make like profit, that he be not deceived in the bargain? If 31 pence be 37 pence, 2:5, what is 84 pence? Multiply 374 primes, by 84 makes 31416; which divide by 31, makes 101 pence, 3:10 penny, or 8 shillings, 5 pence 3:10 of one penny, which is the price for him to sell his wooll to make like profit.

Example.

34
34

374

374
84

1496
2992

31416

1
103 *d.*
31416 (101. 3:10 of one penny.
31111
333

4 Example.

Two Merchants will barter, one hath Su-

gar of 6 pound 4 shillings ready money, and he will sell it for 7 pound the hundred. The other hath Ginger of 4 pound 6 shillings the hundred, and in barter he will sel it for 5 *li.* the hundred; now the question is, at what rate each of them doth gain *per cent.* and which hath the advantage of the other.

First if 6 pound 2 primes, gain 8 primes, what will 100 pound gain? Multiply 8 primes by 100, makes 800 primes; then add 2 or 3 cyphers more to it, which divide by 6:2 primes, makes 12 *l.* 9 primes; 10:31 of a prime, or neer 12 *li.* 18 shillings, which the first man doth gain *per cent.*

Secondly, if 4 *li.* 3 primes gain 7 primes, what will 100 pound gain? Multiply 7 primes by 100, and adde 2 Cyphers more, makes 70000, which divide by 4:3 primes, makes 16 pound, 2 primes, 34:43 of a prime; from which substract 12 pound 18 shillings. 8 pence, rests 3 pound 7 shillings, 7 pence, which the second man hath gained more then the first gained.

5 *Example.*

Two Merchants barter, one hath a certain number of pieces of Sakkins at 18 shillings, a piece, for the which the other doth give him 1806 ells of linnen cloth, at 16 pence the

the ell, and yet 30 *li.* in ready mony; the question is, how many pieces of Sakkin he had. First, find what 1806 els of linnen cloth cost by practice; makes 120 pound, 8 shillings; to the which add 30 *li.* makes 150 pound, 8 s. then divide 150 pound, 4 primes, by 18 shillings, or 9 primes, makes 169 pieces of Sakkin, and 1:9 of a piece.

Example.

3	*li.*	1
1806	(120	4
25992	30	
	150	4
661	*Pieces*	*Piece.*
1504	(167	1:9
999		

6 *Example.*

Two men will barter, one hath Pepper of 22 pence the pound ready mony, but in barter he will sel it for 27 pence the pound: the other hath Cinamon of 3 shillings, 6 pence the pound ready mony, and in barter he will sel it for 4 shillings the pound: the question is, how much Cinamon will pay for 384 pound of Pepper at that rate? First, 384

pound of Pepper at 27 pence the pound is 43 pound 4 shillings; which divide 864 shillings by 4 shillings, makes 216 pound Cinamon, which he must give.

7 Example.

If 4 English ells makes five yards, and 13 yards, makes 50 Pawns at Geans, how many Pawns is in 100 ells English. If 5 be 4, what is 13 makes 10,2:5. Secondly, if 10, 2:5 be 50, what is 100,480,0:13.

8 Example.

Every 4 ells at *Antwerpe* maketh 5 at *Frankeford*, and 25 there makes 24 Braces at *Luques*, the Question is, how many braces in 100 in *Antwerpe*. If 25 be 24, what is 5? makes 4,4:5. Secondly, if 4 be 4 4:5, what are 100, makes 120.

9 Example.

If 3 yards at *London* be 4 ells at *Antwerpe*, how many yards at *London* make 84 ells at *Antwerpe*. If 4 be 3, what 84? makes 63 ells.

10 Example.

At *Roan* 112 ells make but 98 and 100 ells at *Roan* is 112 at *Sivil*, how many of ours in 100 ells of *Sivil*. If 98 *Roan* be 112 ells, what

what 100 *Roan*? makes 114 ells, 1:7 of an ell. Secondly, if 112 els be 114, 1:7, what is 100 *Sivil*? makes 102, 19:25.

11 *Example.*

If 67 yards at *London* be 100 in *Venice*; how many are 7894? multiply by 67 makes 5288 yards, 98:100 parts.

12 *Example.*

A Merchant doth deliver 400 pound sterling in *London* by exchange for *Antwerpe*, at 23 shillings, 5 pence the pound sterling, the question is how much *Flemish* mony he shall receive at *Antwerpe*: put your 23 *s.* 5 *d.* into pence, makes 281 pence, which multiply by 400, makes 112400 pence, which divide by 240, makes 468 pound, 6 shillings 8 pence, which he must receive at *Antwerpe*.

Example.

	s.	*d.*
	23	5
	12	
	276	
	5	
	281	

281
400
112400

	s.	*d.*	*l.*	*s.*	*d.*
	16088				
	1124000		(468	3	8
	244440				
	222				

13 *Example.*

If 100 pound sterling be 104 pound 6 *s.* 4 *d.* pence *Flemmish*, what is one pound sterling worth? Reduce your coyn 134 pound, 6 *s.* 4 pence, into pence, makes 32236; which divided by 100, makes 322 pence, 9:25 pence, or 26 shillings, 10 pence, 9:25 of one penny, for one pound sterling.

If one pound sterling be 1 pound, 14 *s.* 7 pence, *ob. Flemmish*, how much sterling mony is in 100 *li. Flemmish*? Reduce 100 pound into pence, makes 24000 pence; then put it into half pence, makes 48000 half pence, then put 1 *li.* 14 *s.* 7 *d. ob.* into half pence, makes 831; by which divide 48000, makes 57 pound, 15 shillings, 1 penny almost, and so much sterling mony is in 100 pound of *Flemmish* mony at that rate.

Of Gain, and Loss.

IF 13 pieces of Canvas cost 17 pound 12 *s.* how may I sell them to gain 8 pound in the hundred? Multiply 176, by 8 makes 1:408, or 1 *l.* 8 *s.* 2 *d.* almost, and so much must he sel them for to gain 8 pound in the hundred

If

If 17 pound, 12 shillings gain 1 pound, 8 shillings, 2 pence, what wil 100 pound gain? Multiply 1 *li.* 8 *s.* 2 *d.* in Decimals by 100, and divide by 17 pound, 6 prinnes, makes 8 *li.* in the 100, the proof.

Example.

17600
....8
1408

1408 (8 *li.*
276

A Merchant hath lent 630 pound at interest for 10 pound in the 100, for three years, interest upon interest, the question is, unto what sum it will amount unto at the end of the term? Answer: Take the tenth part, and add it into one totall 3 severall times, makes 838 *li.* 10 *s.* 7 *d.* 1:5 of a penny, for the principall and interest, at the rate given, to be paid at the end of three years.

Example.

1. year.	2 year.	3. year.
630	6930	76230
630	6930	76230
693|0	762|30	838|530

2 *Example.*

A Merchant receiveth for principall and interest 838 pound, 10 shillings, 7 pence, 1:5 of a penny at 10.*l.* in the hundred compound interest, which was for mony delivered out for three years; now the Question is, what was the sum of mony that was lent? To doe this, or any other the like Question, divide the sum of mony received by 100 three severall times, and the three quotients will shew the yearly increase of the mony lent, and the last quotient will be the answer to the question, or the mony disbursed, as in the Example following, which is the proof of the former question.

Example.

```
 623        103
838530    (76230(6930
111110     11110
 111        11
  3
 6930 (630 pound lent.
 1110
  1
```

3 *Example.*

A Merchant lent 100 pound for 7 years at 10 pound in the hundred Compound Interest, the Question is what he shall receive at the end of the term.

Ex-

Example.

100 |
10 | 0

——— one year 100 *li.*

110 | 0
11 | 00

——— 2 years, 121 *li.*

121 | 00
12 | 100

——— 3 years, 133 *li.* 2 *s.* 0 *d.*

133 | 100
13 | 3100

——— 4 years, 146 *li.* 8 *s.* 2 *d.*

146 | 4100
14 | 64100

——— 5 years, 161 *li.* 1 *s.*

161 | 05100
16 | 105100

——— 6 years, 177 *li.* 3 *s.* 1 *d.* ob.

177 | 156100
17 | 71561

——— 7 years, 194 *li.* 17 *s.* 5 *d.*

194 | 87 1710

Makes at 7 years end 194 *li.* 17 *s.* 5 *d.*

How to work Compound Interest at any rate per cent.

What is the principall and interest of 352

pound, put out at *li.* in the hundred compound Interest, to be paid at the end of two years? Add 2 cyphers to 352 pound, makes 35200; then place your Interest 8 under the lowest Cypher next the right hand, and multiply 352 by 8, placing the Product under the line, and that will be the Interest which added unto the sum lent, makes the totall of the principall and interest, and so work for the second, third, and fourth year, as in the example.

1 year.	
35200	3801600
....8	8
2816	304128
380|16	410|5728
or 380 *li.* 3. *s.* 2 *d.*	or 410 *li.* 11. *s.* 5 *d.*

First, I multiply 35200, by 8, makes 2816, which I add unto 35200, makes 38016; then I multiply 3801600, by 8, makes 410\|5728, or 11 *s.* 5 d. abating 4 figures for the 4 Cyphers, which I added to the sum for to find out the prime line, as appeareth in the example, and so of any other sum or rate in the hundred.

At 17 pound the hundred per annum, compound

pound interest, what will 879 pound amount unto, to be all forborn unto the end of five years? Add 2 cyphers to your sum given, and multiply by your Interest 17, and add into the principal, and so work 5 years, and the last product wil be the sum of mony to be received, *viz.* 1927 *li.* 3 *s.* 5 *d.*

Example.

87900
17

6153
879

First year.

1028 | 4300
17
---
171 | 9901
2 | 843

Two years.

1203 | 263100
17

184228417
2032631

Three years.

1407 | 81782700
17

1985 | 4724789
407 | 817827

Four years. 1647 &c.

1647 | 1468575900
17

115 | 3002800313
164 | 714685759

five years.

1927 | 1618233803

li.	s.	d.
1927.	3.	5.

If a Merchant buy a parcel of Holland, at 3 *li.* 6. the piece; and another parcell at 4 *li.* 2 *s.* the piece; the third sort at *li.* 10 *s.* the piece; the fourth sort at 5 *li.* the piece; how may he sell 40 pieces, of each sort 10 pieces to gain 18 pound in the hundred, and give 9 months time for the payment? as in the example following.

Example.

10 Pieces at 3.	6. a piece,	33. 0.
10 Pieces at 4.	2. a piece,	41. 0.
10 Pieces at 4.	10. a piece,	45. 0.
10 Pieces at 5.	0. a piece,	50 0.
	The sum is,	169. 0.

16900
18

1452
169

Take the 3:4 of the interest, makes 191 pound 16 shillings 3 pence, 3:5 of one penny, to sell to gaine 18 pound in the hundred for to give 9 months time.

A Merchant sold 300 quarters of Wheat, cost him 352 *li.* ready money, and lost 7 *li.* in the hundred, what did one quarter cost him, and at what rate did he sell a quarter, to lose 7 *li.* in the hundred? Take the Interest at 7 *li.* in the hundred, which is 24 *li.* 12 *s.* 9 pence 3:5, which substract from 352 pound, makes 327 pound 7 shillings 2 pence 2:5 of a penny, and divide the remainer by 300, makes 1 pound, 1 shilling, 10 pence for the price sold: Secondly, divide 352 pound by 300, makes 1 pound 3 shillings 5 pence *ob.* for the price which it cost him.

Rie sold for 3 shillings a bushell loseth 20 pound in the hundred, what will then be lost, if it be sold for 3 shillings 6 pence a bushell? If 3 shillings be 80 *li.* what is 3 shillings 6 pence? Multiply 80 *li.* by 3 1:2, or by 3 shillings 6 pence, makes 2800, which divide by 3, makes 93 *li.* 1:3. Or otherwise, if 36 pence be 80 *li.* what is 42 pence? Multiply 80 by 42, and divide by 36, makes 93 *li.* 1:3 of a pound as before.

If in one ell of cloth sold for 3 shillings, 2 pence, there were gained after the rate of

10 pound

10 pound in the hundred, what did that el of cloth cost? Divide 385, or 38 penny 1:2 by 110, makes 35 pence, that the ell cost.

5
3850 (35 d.
1100
11

If one yard of Holland cloth cost 2 shillings, 11 pence, how many yards shall I buy for 34 pound, 6 shillings? put it into pence, makes 8232 pence; which divide by 35 d. makes 235 yards, 1:5 yard.

How to gaine any rate in the hundred your desire.

Put your price that one yard, ell, pound, or piece doth cost you, into pence; and then for 10 pound in the hundred, take the tenth part of that sum, which is the same number, placed one place nearer to the right hand, and that is the profit or interest; which added up into the price given, makes the price to sell one yard, pound, ell, or piece, to gaine 10 pound in the hundred ready money.

Example.

If one ell of Holland cloth cost 3 shillings, 9 pence, how may I sell to gaine 10 pound

per

per cent. ready money? Put 3 ſhillings 9 *d.* into pence, makes 45 pence: then take the tenth part of 45 pence, which is 4 pence 5:10, or one halfe, makes 49*d.* 1:2 for the price to ſell an ell to gain 10 pound *per cent.*

Example.

d.		*s.*	*d.*	*d.*
45 |	makes	4	1	1:2
4 |5		*d.*		
		74 |	*s.*	*d.* *d.*
49 |5		7 |4	makes 6.	9. 2:5
		81 |4		

If your price you would gain, be not 10 pound in the hundred, then adde 2 cyphers to your number of pence given, and multiply that number by your intereſt, omitting to multiply by the cyphers, and the product under the line is your intereſt or gaine, which added up into one ſum, makes the price to ſell one yard, ell, pound, or piece, to gaine according to the rate deſired, example.

If one pound of cloves coſt 4 ſhillings 10 pence, how may I ſell to gaine 9*li.* *per cent.* ready money? Put 4*s.* 10*d.* into pence, makes 58*d.* then adde 2 cyphers, makes 5800; which multiply by 9, makes 5:22, or 5 pence, 22:100 parts of one penny; which added up to the upper

upper numbers, is 63 *d.* 32:100 parts of one penny, or 5*s.* 3*d.* 1:5 of a penny for the price to sell one, to gain 9 pound in the hundred,

At 9 pound in the hundred.	At 12 pound in the hundred.
5800	47|00
...9	12.
522	494
6322	7
	52|64

or 5*s.* 3*d.* 22:100.

or 4*s.* 2*d.* 16:25*d.*

If one piece of Rayſons coſt 18 ſhillings, 9 pence, how may I ſell to gain 18 pound in the hundred, ready money? Put your mony into pence, makes 225 pence, to which adde 2 cyphers, makes 22500; which multiply by 18, makes 40:50, or 40*d. ob.* which added into the price makes 265*d. ob.* for the price to ſell one piece to gaine 18 *li.* in the hundred.

Example.

225	00
...	18
18	00
22	5

21

xl
x65 (22s. 1d. ob. for the price of 1 piece,
xxx
x

A Merchant lent wares for 10 pound in the hundred profit for 12 months, and at the end of 6 months he received principal and intereſt 356 li. the queſtion is, what was the ſum lent? Anſwer: adde 2 Cyphers to 356 li. and divide by 105 pound, which is 6 months intereſt and principall, makes 339 pound, 1:2 parts of a pound for the ſumme lent.

Example.

	li.	li.
4x55	(339.	5:105
356000		
x05555		
xxxx		
x		

	3390|5	
Intereſt for	339|05	yeares.
Intereſt for	169|525	1:2 yeare.
The proofe.	356|00	

Equation.

Equation of Payment.

The Rule of payment is to bring divers payments due at severall dayes, to be paid at one entire payment.

A Merchant is to pay at divers payments 600 pound: *viz.* 200 pound present, 200 pound at 8 months, 140 pound at 6 months, and 60 pound at 2 months: now he is willing to pay all at one payment; what time must be given? The ready mony being omitted, set the rest as numerators thus, 200:600: 140:600:60:600 parts, which in their least terms abbreviated, makes 1:3 7:30 and 1:10. Now multiply 1:3 by 8, makes 2, and 2:3; secondly, 7:30 by 6, makes 1 and 2:5; thirdly, 1:10 by 2 makes 1:5; totall is 4 months, and 4:15 of a month for the time sought.

Example.

200:8	3		
105:7	5	2	
15:1	5	320	(4 months, 20:75.
		75	
320	75		

A Merchant hath owing him 752 pound, to be paid 200 pound present; 200 *li.* at 3 months, 130 *li.* at 5 months, and the rest at

12

12 months; now at what time ought this money to be paid all at one payment?

Example.

200:752	130:752	222:752
3	5	12
600	650	2664
2664		
650	15	months. days.
600	3924	(5. 6.
	782	
3914		

A Merchant hath owing unto him 782 *li.* 12 shillings, to be paid 1:3 at 4 months, 1:2 at 7 months, the rest at 12 months, what time must it be all at one payment.

Months.

1:3	4	1	1:3
1:2	7	3	1:2
1:6	12	2	0:0
		6	5:6

Makes 6 months, 5:6 of a month.

Wines worth 14 pound ready money are sold for 16 pound, to pay 1:3 at 3 months, 1:2 at 4 months, and the rest which is 1:6 at 12 months; the question is, what is gained in 100 pound in 12 months.

months.

	months.		
1:3	3	1	0:0
1:2	4	2	0:0
1:6	12	2	0:0
		5	0:0

Makes at 5 pound in the hundred.

Sugars worth 21 pound ready mony are sold for 25 pound, to pay 1:5 ready mony, 1:8 at 4 months, 3:10 at 7 months, 3:8 at 15 months; the question is, at what rate *per cent. per annum* they were sold?

	months.		
1:8	4	0	1: 2
3:0	7	2	1:10
3:8	15	5	5: 8
		8	9:40

Makes 8 pound, 9:40 *per cent.*

Allegation Mediall.

ALlegation is an art teaching to combine or knit together divers things unequally prised, and thereby to find an equal price of any part of the said mixture. Allegation Mediall,

mediall, is that which by the augmenting the quantity of every ſeveral portion to be mixed by his own price, and dividing the ſum of all the Products by the totall of the ſeverall portions to be mixed, findeth the thing ſought. *Example.*

Three ſeveral ſorts of Barly are to be mixed; *viz.* 34 buſhels at 18 *d.* and 76 at 20*d.* and 100 at 22*d.* the queſtion is, what one buſhell of that mixture will be worth? Firſt multiply each number by his price, *viz.* 34 by 18, 76 by 20, and 100 by 22, makes 612, 1520, and 2200, the Totall is 4332: then adde the number of buſhels into one ſumme, makes 210; by which divide 4432*d.* makes 20 pence, 132:21 of one penny for the price of one buſhel ſo mixed.

2. *Example.*

If you will mixe 30 gallons of Sack at 4*s.* a gallon, with 150 gallons of white Wine at 2*s.* the gallon, what wil a gallon of that mixture be worth? Multiply 30 by 4, makes 120*s.* alſo 150 by 2*s.* makes 300*s.* Totall is 420*s.* then adde 30 and 150 makes 180 Gallons; by which divide 420 *s.* makes 2*s.* 1:3 of a ſhilling, or 2 ſhillings 4 pence, for the price of one gallon ſo mixed.

Example.

3. Example.

Admit there were 6 portions of silver of 7 ounces fine, 12 of 8 ounces fine, and 25 of 10 ounces fine, which are to be mingled with 10 pound of Copper, what is a pound of that mixture worth? For answer: multiply 6 by 7, makes 42; also 12 by 8 makes 96, and 25 by 10, makes 250, the totall is 388, which being divided by 53, the totall of 6, 12, 25 and 10 makes 7 ounces, 17:53 of an ounce; and so much fine is a pound of that mixture.

4. Example.

A Merchant hath 6 severall sorts of Spices, of which he will sel of each an equal quantity, of severall prices, for the sum of 323 *li.* 8 *s. viz.* Cinamon large at 4*s.* 6*d.* a pound; Nutmegs Case at 3 *s.* 8 *d.* a pound; Large Maces at 8 *s.* a pound; and Pepper Case at 2 shillings 2 pence a pound, Pepper Callico at 22 pence the pound, and Ginger large at 10 pence a pound; the question is, how many pound he must have of each to make the just summe of 323*li.* 8 shillings? Answer: first, put your mony into shillings, makes 6468*s.* Secondly, put all your prices of the Spices into one sum, and by that sum, which is 21 shillings, divide 6468, makes 308 pound which he must sell of each.

Example

Example.

	s.	d.
1	4	6
2	3	8
3	8	0
4	2	2
5	1	10
6	0	10
	21	00

li.

6468 (308

2222

22

	li.	s.	d.
1	69	6	0
2	123	4	0
3	56	9	4
4	33	7	4
5	28	4	8
6	12	16	8
	323	8	0

Allegation Alternat.

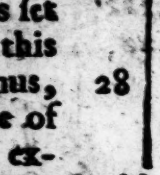
ALligation Alternat is that, which alereth the places of such excesse as commonly fall between the mean price, and the extreams, in which counter change, if the extreams bee quall, then the difference between the mean price, and lesser extreame is to be set against the greater extream, and of the contrary if otherwise.

Example.

1 Example.

White Wine of 20*d.* the gallon is to be mixed with Sack of 3*s.* a gallon, so that there must be mixed 300 gallons to make the price to be but 2*s.* 4*d.* the gallon, the question is, how much of each sort must be taken.

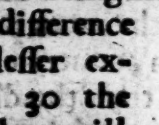
The numbers set downe, as in this Example thus, the difference of 20 the lesser extream from 28, is 8; also the difference of 36 the greater extream is also 8, so that I finde you must take as many of one sort, as of the other, to make this mixture: *viz.* 150 gallons of each sort.



2. Example.

White Wine of 16*d.* a gallon is to be mixed with Sack of 40*d.* the gallon, how many gallons must be taken of either sort, so that 120 gallons may be of 30 pence the gallon.

The numbers being set downe, as in this example, the difference of 16 the lesser extreame from 30 the mean price, there will remain 14, which I place against 40; then take the difference of 40, the greater extream from



from 30 the mean Price, there will reſt 10 to be linked with the leſſer extream; whereby I finde, that ſo often as I take 14 gallons of Sack, I muſt take 10 gallons of White Wine, to make the mixture;

wherefore if 24 gallons be 120, what is ——— { 14 | 70 / 10 | 50 }

3. *Example.*

A certain Clothier is deſirous to mingle 144 pound of Wool of 4 ſorts: *viz.* Blew wool of 16*s.* the ſtone, red wool of 11*s.* the ſtone, green wool of 12*s.* white wool of 9*s.* the ſtone, how many ſtones of each ſhall he take, that one ſtone of the mixture may be worth 14 ſhillings.

The counter-change being made, according to the Rule, as in the Margent, it is plain that ſo often as you take 5 of blew, you muſt take 3 of greene, and 2 of red, & 2 of white. Therefore if 12 be 144, what is

14	16.	5
	12.	3
	11.	2
	9.	2

is	5.	10
	3.	36
	2.	24
	2.	24

The end of the firſt Book.

10 AP60

THE SECOND BOOKE

Containing a Treatise OF DECIMAL ARITHMETICK;

Wherein is taught how to work all manner of operations in *Decimall Arithmetick*, more speedy and easie, then by vulgar *ARITHMETICK.*

And first of the *Decimall TABLE.*

LONDON
Printed by *Richard Cotes* for *John Sweeting* at the *Angell* in *Popes-head Alley*, 1649.

251

THE USE OF THE DECIMALL TABLE.

THe Decimall Table following doth begin from one farthing unto a prime, or 2 ſhillings: ſo that if you have a Decimall Fraction given, which doth contain 90625 ſixths: ſearch it in the Decimal Table, and you ſhal find it over againſt 21 pence, 3 farthings, and that is the value of that Fraction given.

Or if you would know how to ſet out 16 pence halfe penny in Decimals; ſearch in the Table againſt 16 *d.* 2*q.* and you ſhall find 6875 fifths for the Decimall ſought.

But if you would ſet out any number of ſhillings from one ſhilling unto one pound, or 20 ſhillings; ſearch in this little Table following, and you ſhall find your deſire. As if you would ſet out 15 ſhillings in Decimals, you ſhall finde 7 primes, 5 ſeconds for 15 ſhillings, and ſo of any other ſumme, as in the Example following.

Example.

Example.

ſhil.	l. s
1	05
2	10
3	15
4	20
5	25
6	30
7	35
8	40
9	45
10	50
11	55
12	60
13	65
14	70
15	75
16	80
17	85
18	90
19	95
20	1l.

q.	1.2.3.4.5.6.7.	q.	1.2.3.4.5.6.7
1	0010416	6	025
2	0020833	1	0260146
3	0031250	2	0270833
		3	0281250
1	0041666	7	0391666
1	0052083	1	0302083
2	0062500	2	0312500
3	0072916	3	0322916
2	0083333	8	0333333
1	0093750	1	0343750
2	0104166	2	0354166
3	0114583	3	0364583
3	0125	9	0375
1	0135416	1	0385416
2	0145833	2	0395833
3	0156250	3	0406250
4	0166666	10	0416666
1	0177082	1	0427082
2	0187500	2	0437500
3	0197916	3	0447916
5	0208333	11	0458333
1	0218746	1	0468750
2	0229166	2	0479166
3	0239582	3	0489584
6	025	12	05

q.	1.2.3.4.5.6.7.	q.	1.2.3.4.5.6.7.
12	05	18	075
1	05 10416	1	07601 46
2	05208 33	2	07708 33
3	05312 5	3	07812 5
13	05416 66	19	07916 66
1	05520 83	1	08020 83
2	05625	2	08125
3	05729 16	3	08229 16
14	05833 33	20	08333 33
1	05937 5	1	08437 5
2	06041 66	2	08541 66
3	06145 83	3	08645 83
15	0625	21	0875
1	06354 16	1	08854 16
2	06458 33	2	08958 33
3	06562 5	3	09062 5
16	06666 66	22	09166 66
1	06770 82	1	09270 82
2	06875	2	09375
3	06979 16	3	09479 16
17	07083 33	23	09583 33
1	07187 46	1	09687 5
1	07291 66	2	09791 66
3	07395 82	3	09895 84
18	075	24	1000000

THE SECOND BOOK, Containing a Treatise of *Decimall Arithmetick.*

The Declaration of the parts of the Decimall Table.

FIrst the Decimall Table in the left Margent containes certaine numbers in great and small letters; first from one farthing unto one prime, or tenth of a pound, or 2 shillings. Then from one prime for every shilling unto one pound sterling, or 20 shillings.

First, beginning in the left margent, is set down one farthing in the uttermost parallel to the left hand, in the first parallel of the Table, and so continuing from 1 farthing to 1 prime or 2 shillings; and over against every number on the left side in a right line towards the right hand is contained the numbers in Decimals, answering unto every farthing, from 1 farthing to 1 prime or 2 shil-

lings; and in the upper margent in the head of the Table is contained the true Denominations of the ſaid numbers in primes, ſeconds, thirds, fourths, fifths, ſixths, and ſevenths, which are ſmall enough to work any queſtion exact to a ſmall fraction of one penny in a ſum of great value, as ſhall appear by examples following. But here you ſhall note, that all the numbers in the ſaid Table cannot be exact and perfect.

To finde the value of a Decimall Fraction in the parts of Coyne.

Suppoſe the number given to be 2 ſeconds, 4 thirds, 5 fourths, and 7 fifths, and you deſire to know the true value thereof in coin; ſet down your numbers, as in the example following, and marke your prime line, and then multiply the fraction by 240, the pence in one pound, and the numbers that ariſe by multiplication, over the prime line are the ſum of pence, the value of that fraction given, and the remainer on the right hand of the prime line is the fraction of one penny.

Example.

Example.

	1.2.3.4.5.
	0 2 4 5 7
	2 4 0
	9 8 2 8 0
4	9 1 4
pence 5	8 9 6 8 0

8968:10000 of a *d.*

Here by multiplication of 2457 fifths by 240 pence, I finde 5 pence is gone over the prime line, and there remains 8968:10000 parts of one penny. Now to know the value of that fraction in farthings, multiply the same by 4, and so many as goe over the prime line, are farthings, the rest is the fraction of a farthing.

Example.

	8968
q.	4
3.	5872

Numeration in Decimals.

If you have a number to be expressed in Decimals of money, or coyn sterling, learne first by the Decimall Table how to expresse your coin, from one penny unto one pound sterling,

sterling, or from 1 farthing to 1 pound sterling, for which the Table going before was calculated. If you would know the manner how to calculate the said Table divide one pound, adding 7 cyphers unto it, by your part you would know how to set forth in decimals: as if you would know how a farthing will stand in decimals, divide 1 pound with cyphers by 960, the number of farthings in one pound sterling, and the quotient will be the numbers in decimals, signifying one farthing.

Example.

```
      6
   41644    ....7
 10000000 (10416
  9696660
   9999
```

So that I find, that dividing of 1 pound by 960 farthings, the quotient is 1 third, 0 fourth, 4 fifths, 1 sixth, and 6 sevenths: for if you should have proceeded, adding more cyphers, the quotient would have beene alwayes 6, because I see the number remaining to bee the same it was at the last, that is, 64. And although a farthing cannot be set out exact in Decimals, yet it will serve in Multiplication and Division: for in 10000 yards or els, it will not dif-

fe

fer 1 penny, as shall appear afterwards by examples in their places.

How to set out a penny in Decimals.

Divide 1 penny with cyphers by 240, the number of pence in 1 pound sterling, and the quotient will be a penny in Decimals.

2 *Example.*

```
  1 1
  4 6 6          3.4.5.6.7.
1 0 0 0 0 0 0 0  (4 1 6 6 6
 2 4 4 4    0
  2 2
```

Here seeing that after I find the first quotient 6, and the remainer 16, as before, I cease Division, as needless any further, knowing it will produce 6 in the quotient infinitely, and therefore I put as many times 6 in the quotient as I find expedient and needfull, and 1 penny stands thus:

```
3.4.5.6.7.
4 1 6 6 6
```

And these and divers other numbers will not be set exact in Decimals, but yet they will serve to great purpose and exactness in a multitude of questions, in saving an infinite labour in Reduction, and Multiplication, and Division.

How

How to break a pound into his exact parts.

Set down 1 pound thus, 10; then take the tenth, which is one prime, or 2 shillings, which I note thus, 2

1

Then take half of that prime or 2 shillings, saying, the 1 half of 10 is 5, or the one half of one prime is 5 seconds, or 1 shilling; then the one half of 5 seconds is 2 seconds, and 5 thirds; saying the 1 half of 5 seconds is two seconds and 5 thirds, which is 6 pence: then half of 2 seconds, 5 seconds is one second, 2 thirds, 5 fourths which doth represent 3 *d.* in Decimals. Again, one half of 1 second, 2 thirds, 5 fourths, is 6 thirds, 2 fourths, 5 fifths, representing 1 penny half penny, or 3 half pence. Again, half of that number is 3125, or 3 thirds, 1 fourth, 2 fifths, 5 sixths, signifying 3 farthings in Decimals, behold the work.

	2 *s*	1 *s*,	6 *d.*	3 *d.*
l.	2	50	2.3 25	2.3.4
10	10	5 25	25 125	1 25
1	5			

	1 *d. ob.*		or 3 *farthings.*
125	3.4.5	625	3.4.5.6.
625	6 25	3125	3.1 2 5

It

It is alſo very neceſſary to underſtand the proportionall parts of a pound, for by them are many queſtions ſpeedily wrought in decimals, as ſhall appear in the examples of Multiplication and Diviſion afterwrads:

How to expreſs the value of any number in Decimals.

Admit for example this number following is to be expreſſed according to the computation of Decimall Arithmetick, *viz.* 3785|725 thirds: then for the expreſſing the ſignificarion of that number in the known parts of coyn, firſt, mark out your prime line, to diſtinguiſh the whole numbers from the Fractions with a right down ſtroke with the pence, and then you ſhall find the numbers to ſtand thus 3785 pound, 7 primes, 2 ſeconds, and 5 thirds; which ſearch in your Decimall Table, and it doth ſignifie 14 ſhillings, 6 pence; ſo that the whole number is 3794 pound, 14 ſhillings, 6 pence; and ſo of all numbers, for you ſhal underſtand, that every prime doth ſignifie in value 2 ſhillings, every ſecond 2 pence, and 2:5 parts of 1 penny, and every 5 thirds 1 penny, and 1:5 of one penny, or elſe every prime is 1:10 of 1 pound, every ſecond 1:100 part of 1 *li.* and every third 1:1000 part of 1 pound, &c. infinitely,

How

How to remove a Decimall number from one place to another.

If you have a Decimall number given: as for example, 3 pence, which doth thus ſtand in Decimals, 1 ſecond, 2 thirds, 5 fourths; then you deſire to know how it will ſtand in the place of primes, pounds, or in the place of 10 *li.* or hundreds, or thouſands. Remove it one place toward the left hand, and it is 1 prime, 2 ſeconds, 5 thirds, or in known parts of coin 2 ſhillings 6 pence. Again remove them one place more towards the left hand, and it will be 1 pound, 2 primes, 5 ſeconds, or 1 pound, 5 ſhillings. Again, remove one place more, and it 12 pound, 10 ſhillings: Again, remove it one place more, & all your fractions are in whole numbers, and will ſignifie 125 pound, &c.

2 *s.* 6 *d.*	1 *l.* 5 *s.*	12 *l.* 10 *s.*
I		
1 2 5 0	1 2 5 0 0	1 2 | 5 0 0 0
l.	*l.*	*l.*
125|0000	12500000	
l.		
12500|0000		

And this Rule is very neceſſary to be well and perfectly underſtood; for by it any price be-

being given of a unite in Decimals, you may speedily know what 100 or 1000, or 10000 wil cost at that rate, only by adding of one, two, or more cyphers.

As for example, if one ell cost 6 shillings 3 pence; what will 100 ells cost at that rate? first, set out your price in Decimals thus, 3 primes, 1 second, 2 thirds, 5 fourths, and adding of two cyphers, because 100 hath 2 cyphers, the sum will be 31|2500: and because your fractions were fourths, cut off 4 figures and cyphers towards the right hand, or mark your prime line, and you shall find that 100 ells will cost 31 pound, 5 shillings at that rate.

1 *Example.*

l. | 1. 2. .
31| 2500

If the numbers of the price given wil not be exactly set down in Decimals; as for example, at 7 pence 3 farthings a yard, what will 100 yards costs? Set down your price as near as may be, by your Decimall Table, which is 3229 sevenths, adde unto it two cyphers, makes 322900; and because your fractions are sevenths, cut off 7 figures, and there will be 3 pound, 4 shillings, 7 pence.

2 *Example.*

2 Example.

l.	1.2.3.4.5.6.7.8
3	2291600

And thus much shall suffice for Numeration in Decimals, and I will now proceed unto the second Rule of Arithmetick, viz. Addition in Decimals.

CHAP. II.

Addition in Decimals of Coin.

IF you have divers several numbers given in Decimals to bee added together into one sum, place them in order every one right under his like denomination, or kind, Integers under Integers, Primes under Primes, Seconds under Seconds, &c. Then begin your Addition at the right hand at the least Denomination given, and add them all according to the Rule of Addition, as if they were all whole numbers, always having a care to mark out your prime line, and the totall of your Addition will shew you the just value of those whole numbers and fractions.

1 Exam-

1 Example.

Integers.	1.	2	3.	4.	5
3576	7	2	5	0	0
2400	0	3	2	5	0
7206	5	1	2	5	7
3278	6	3	7	5	6
16461	9	0	7	6	3

Totall is 16461 *li.* 18 *s.* 1 *d.* 3 *q.*

	li.	*s.*	*d.*	*q.*
Here the first number is	3578	14	8	2
The second number is	2400	00	7	3
The third number is	7206	10	3	0
The fourth number is	3278	12	9	0
The totall sum is	16461	18	1	3

CHAP. III.

Substraction in Decimals.

IF you have two numbers in Decimals, the one to be substracted from the other, place them above one the other, as in Addition, the greater numbers in the upper part, and the smaller number right underneath, and then substract them as if they were whole numbers and

and note down the remainers each in their proper places, as in this example.

1 *Example.*

	li.	1.2.3.4.5
Lent.	78569	78563
Paid.	69587	06250
Reſt.	8982	72313

	li.	*s.*	*d.*
	8982	14.	5

Proof.	78569	78563

	li.	*s.*	*d.*	*d.*
The proof, Lent.	78569	15.	8.	1:2
Paid.	69587	1	3	0:0
	8982	14	5	1:2

2 *Example.*

	l.	1.2.3.4.5
Lent.	38057	32567
Paid.	29730	96254
Reſt.	8326	36313
Proof	38057	32567

The

The Proof in Coyn.

	l.	*s.*	*d.*
Lent	38057	6	6
Paid.	29730	19	3
Reſt.	8326	7	3
Proof.	38057	6	6

CHAP. IV.

Multiplication in Decimals.

IF you have any two numbers given to be multiplyed in Decimals, place your Multiplicand uppermoſt and your Multiplyer right underneath, as if the ſame were abſolute whole numbers, and no fractions at all; and when your numbers are placed, mark how many fractions your two numbers doe contain, and note that number down, and multiply according to any of my former inſtructions in the firſt book; and when the product is gathered, cut off your prime line, juſt ſo many figures and cyphers, as your Multiplicand & Multiplier had fractions between them, and the work is ended.

Example.

Example.

If you will multiply 758|325 thirds, by 385|7 primes, I place first my numbers, and then I find my multiplicand to have 3 fractions, to wit, primes, seconds, & thirds, and I find my multiplyer to have one fraction only primes, which makes 4 fractions, and so many figures I cut off from the Product.

Example

1.2.3

758325

3857

5308275

3791625

6066600

2274675

2924859525

2 *Example.*

If you will multiply 34 pound 5 shillings 3 pence, by 16 pound, 6 shillings, 6 pence, set them in Decimals, 34|2625 fourths, by 26|325 thirds, and multiply them together, and cut from the product 7 figures to the right hand, and the Product will be 55[illegible] pound, 6 shillings, 8 pence ob. almost.

Example.

Example.

1,2,3,4

342625
16325

17131125
6852500
10278750
2055750
342625

5593353125

3 *Example.*

If you will multiply 758 Integers by 3 primes, 7 seconds, 5 thirds, which is by 7 shillings, 6 pence, place them as in the last example, and from the Product cut off the 3 figures for the 3 fractions, and the totall is 284 pound, 5 shillings, the sum that 758 ells will cost at 7 shillings, 6 pence an ell, &c.

Example.

758
375

3790
5306
2274

284250

If

If you will multiply Fractions by Fractions in Decimals; as to multiply 5 primes, 2 seconds, 6 thirds, 3 fourths, by 7 primes, 2 seconds, 5 thirds; set them as before, and cut off 7 figures.

4 *Example.*

1.2.3.4

5263

725

26315

10526

36841 makes 7 *s.* 7 *d. ob.*

3815675

If you will multiply in Decimals by 10, or by 100, or by 1000, &c. set down your numbers, and mark how many Fractions there be in your Multiplicand, and then add so many cyphers as your Multiplier hath to the right hand, and cut off your prime line, and the work is ended; as in this example.

Example.

1.2.3.4.5.6

7|856025

100

785 *l.* 12 *s. ob.*

785|602500

How

How to change any Fraction given into Decimals.

Admit there be a Quotient of a Division, which 358 pound, 126:255 of one pound, which Fraction you would turn into Decimalls; add a Cypher to your Numerator of your Fraction, makes 1260: but because your number will not be evenly divided by your Denominator 255, therefore adde more Cyphers, and then divide the number by 255, makes 49411 fifths in Decimals to be joined with the whole numbers 358|49411 fifths, and are now fit for Multiplication and Division in Decimals.

5 *Example.*

```
 1034
 240505          1.2.3.4.5
1260000          (49411
 255555
  25555
   222
```

Admit there be a Fraction to be set out in Decimals thus, it is required to know what 156 yards of cloth will cost at a 196:784 of a pound for one yard. Add to 156.2 or more cyphers, and divide by the Denominator 784, makes 25 seconds, by which multiply 156 yards, makes 39 pound.

6 Example.

156			
25		00	
		3320	12
780		296000	(25
312		7844	
		78	
39	00		

7 Example.

For the proof of this work multiply 156 by 196, makes 305.76; which divided by 784 makes 39 pound, as before.

196			
156			
		00	
1176		0750	1.
980		30576	(39 the proof
196		7844	
		78	
30576			

CHA

CHAP. V.

Division in Decimals.

IF you will divide any numbers in Decimals, either whole numbers by Fractions, or fractions by whole numbers, or whole numbers and fractions by whole numbers and fractions; set them down according to the Rules in Decimals in the operations before going. As for example, a certain Merchant bought him as much cloth as cost him 284 pound, 5 shillings, at 7 shillings, 6 pence an ell, the question is, how many ells he had for his mony? To do this, or any other the like question, divide your sum of mony 284 pound, 5 shillings, by seven shillings 6 pence and the quotient will shew you what number of ells, and parts of an ell (if any be) were bought for that mony.

1 Example.

0
300
22790 *Ells.*
284250 (758
37555
377
3

How to divide the ſmaller number by the greater.

If you will divide 34 pound, 6 ſhillings, amongſt 36 men; place your numbers adding 3, or 4, or 5 cyphers; and then divide by 36, makes 95277 fifths; or in coin 19 ſhillings, 0 pence, *ob.* for every mans portion.

2 *Example.*

1232
190288 1.2.3.4.5
3430000 (95277, or 19 *s.* *ob.* 1.4
36660
333

What is the quotient of 724 pound, divided by 3.4 of a unite, or 15 ſhillings? anſwer: divide 724 by 75 ſeconds, makes 965 1:3; for triall whereof, multiply 965 1:3 by 15 ſhillings; or 75 ſeconds, makes 724, as in the example.

2 *Example.*

2 *Example.*

```
 421
 49085          1.2.3
724000 (965|333          or 965      1:3
 75555                       75
 777                      ------
                           4825
                          67555
                             2
                          ------
                          724|00
```

The Proof.

This last question is in effect no other but as the former: for if I shall say, a Merchant buyes broad-cloth, costs him 724 pound at 15 shillings, or 3:4 of a pound one yard, the Question is, what number he had for his mony? and by division I find he had 965 yards, and 1 third part of a yard, as is proved in the example; and so dividing 724 by 3:4, the quotient is 965, 1:3.

3 *Example.*

If you will divide the Product of the second example in multiplication, which was 559|3353125 sevenths by 16325 for the proof of that work, which ought to bring out the Multiplicand 34|2625; or rather if

you will divide 559 pound, 6 shillings, 8 pence, *ob.* almost by 16 pound, 6 shillings, 6 pence, the quotient will be 4 pound, 5 shillings 3 pence.

Example.

	1	048		
	4	2201		
Divisor	69	58086	*l.*	1.2.3.4
16 325	55	3353125	(34	2 6 2 5
	000	0000000		
	489	7500005		
	65	305552		
	3	26966		
		9721		
		38		
The	559	3353125 *proof.*		

How to find the Prime line in any Division Decimall, or to find the true Denomination of the Quotient.

In any Division decimall, alwayes marke out your prime line in your Dividend with a streight down line with the pen, then set your Decimall fractions in primes, seconds, thirds, fourths, &c. beyond the line; also doe the like in your divisor, and then mark how often you may remove your divisor, that the whole

whole numbers of your Divisor may stand under the whole numbers of your dividend, and so many figures shal your quotient have in whole numbers, the rest are to be marked with prickes in the quotient for primes, seconds, thirds, &c.

If you will divide 938|61375 fifthes by 34 pound, 35 seconds, then place them with prickes, as in the example following. I find having placed my divisor underneath my dividend, that I may remove my divisor twice under the whole numbers of my Dividend, and therefore I conclude, the first 2 numbers of my quotient will be whole numbers, which I mark from the rest of the numbers in the quotient with a line, and then dividing according to the former instruction, you shall find the quotient wil be 17 pound, 3 primes, 2 seconds, and 5 thirds.

Example.

```
   17
 22851
 252168        li.  1.2.3        l.   s.   d.
938|61739   '(27|3 2 5   or   27   6    9
34|355558
 343333
  3444
   33
```

2 *Example.*

If you would divide 15554 pound, 2 primes, 5 seconds or 5 shillings, by 45 pound; place them as in the example following, and you shall find that there will be in the quotient 3 figures in whole numbers, and the rest will be primes and seconds, so that dividing of 15554 pound, 5 shillings, by 45 pound, the quotient is 345 pound, 13 shillings.

Example.

```
  2 2
  2020                  l. 1.2        l.     s.
15554|25(345 | 65 or 345      13
 455555
  4444
```

3 *Example.*

If the greatest number of your Divisor be primes, then the figures of your whole numbers in the quotient will be once greater in value, then the times you can remove your Divisor, as if you would divide 241 pound, 5 primes, by 7 primes, then whereas you can remove your Divisor but two times under the whole numbers 241, yet you shall have 3 numbers in the quotient in whole numbers, because your first figure of your divisor is primes;

primes; so that in dividing 241.li.5 primes, by 7 primes, I find the quotient will be 345 pound, or integers; and so many yards, at 14 shillings a yard, which is 7 primes, will 241 pound 10 shillings buy.

Example.

33	*yards or pounds.*
241|5	(345
777	

4 *Example.*

If you will divide 16 pound, 875 thirds, which is 16 *li.* 17 *s.* 6 *d.* by 375 thirds, which is 7 *s.* 6 *d.* or which is all one, imagin there is as much cloth of 7 *s.* 6 *d.* a yard as cost 16 pound, 17 shillings, 6 pence; the question is, how many yards was bought for that mony? placing your numbers in the example following, I find 45 yards is the answer to the question.

Example.

x	*yards.*
16,875	(45.
3755	
37	

5 *Example.*

If you will divide whole numbers and fractions by whole numbers, place the whole numbers and fractions uppermost, and mark out your prime line, and then set your Divisor under-neath the lowest figure in value of your Divisor, will shew you what is the denomination of the first figure of your quotient. As if you will divide 13 *l.* 95 seconds by 45; or which is all one if you shal say; if 45 pieces of figs cost me 16 *l.* 19 *s.* what did one piece cost? divde 13|95 seconds by 45, makes 31 seconds, or 6 *s.* 2 *d.* 2:5 of a penny for the price of one piece. And in this sort the price of any number of yards, ells, or pounds, being given it in dividing by the number of yards, els or pounds, the quotient will be the price of one; & by this Rule you save a labour of Reduction, alwayes dividing the price by the number given, the greater by the lesser, or the lesser by the greater.

Example.

4	1	2	*s.*	*d.*	*d.*	
33|65	(3	2 or	6	2	2|5	
455						
4						

6 *Example.*

6 Example.

If 456 ells of cloth cost 575 pound, 7 primes, what will one ell cost? divide 575 pound; 7 primes by 456 ells, makes 1 pound 2625 fourths, or in coyn, 1 pound 5 shillings, 3 pence for the price of one ell.

```
 1
 2822
119548    l.  1.2.3.4.    l.  s  d.
375|70  ⊗ (1|2 6 2 5  or 1  5  3
4 566666
 45555
  444
```

Reduction in Decimals.

If you will reduce 75 pound, 12 shillings, 9 pence into Decimals, enter your Decimall Table, and for 12 shillings, find 6 primes; then loook for 9 pence, and you shall find 375 fourths; so the totall is 75 pound, 6375 fourths, and are now fit and apt for any Decimall operation.

If you multiply or divide 84 pound, 13 shillings, 6 pence, by 17 pound, 3 shillings, reduce them into Decimals by the Table, makes for 84 pound, 13 shillings, 6 pence, 84:675, and for 17 pound, 3 shillings, 17:15, and

and are now fit to be multiplyed or divided one by the other.

If you will reduce 189:756 parts of 1 pound into Decimals: divide 189, adding 3 cyphers to it, by 756, makes 25 seconds for that Fraction in Decimals: and now for example, if 158 ells of cloth and 189:756 parts of an ell cost 70 *l.* 2 *s.* 6 *d.* what will 640 ells cost at that rate? Now according to vulgar Arithmetick, either I must reduce 158 ells 189:756 parts of an ell into 756 parts, or otherwise I must reduce the Fraction into his least terms, makes 1:4; then I multiply or reduce 158 ells into fourths, makes 633 fourths for the first number in the Golden Rule. Secondly, reduce 79 pound, 2 shillings, 6 *d.* into pence, makes 18990 pence for the second number; then put 640 ells into fourths makes 2560, fourths; then multiply 18990 by 2560, makes 48614400; which divide by 633, makes 320 pound.

Example.

```
  50
 4306          4        li.
48614409   (76800 (320
 6333333     24440
  63333       22
   666
```

Th

The same Example wrought by Decimals.

If 158 ells 1:4 ell cost 79 *li.* 25. 6*d.* what will 640 elles cost at that rate? Place them in decimals thus: If 158 | 25 seconds cost 79 | 125 thirds, what 640 ells? Multiply 79 | 125 thirds, by 640, makes 50640000; which divide by 15825, makes 320*li.* the quotient.

Example.

	1.2.3.		
79	1 2 5		
	6 4 0	3165	*l.*
		50640000	(320
3165	0 0 0	25822	
47475	0	2538	
50640	0 0 0		

Or otherwayes.

Divide 15825 by 79125, adding one Cypher makes 2 primes for the quotient; wherefore I conclude, that one half of 640 pound, which is 320*l.* is the answer to the question demanded. Also divide 79125 by 15825, the quotient is 5 primes, by which multiply 640 pound, makes 320 pound for the answer to the question, as before.

If a Phillips Dollar be worth 4 shillings 8 pence

pence, what are 465342 Dollars worth in ſterling money? Anſwer, multiply 465342 by 2 primes, which is 4 ſhillings, and take the ſixth part of that product, and adde unto it, makes 1085798 primes for the anſwer.

Or otherwiſe, multiply by 2 primes, and 1:3 of a prime, becauſe 8 pence is 1:3 of a prime, and both wayes will produce the ſame anſwer.

Example.

465342	2	1:6
93068	4	
15511	4	
108579	8	

465342	2	1:3
93068	4	
15511	4	
108579	8	

If a common Dollar be worth 4 ſhillings, and a Princes Dollar be worth 4 ſhillings 6 pence, how many Princes Dollars will pay for 7584 common Dollars? Multiply 7584 by 4 *s.* and divide by 4 *s.* 6 *d.* makes 6741 Dollars and 7 ſeconds, and 5 thirds will remain, which is 18 pence; ſo that I conclude, 6741 Princes Dollars at 4 ſhillings 6 pence a piece will pay for 7584 common Dollars, and there will remain 18 pence.

Example,

Example.

7584	160375 *Dollars* 2.3
2	1516800(6741 75
	225555
15168	2222
	22

In 654 pound, how many Dollars of 3 shillings a piece? Adde two Cyphers to 654, makes 65400, because 3 shillings hath 2 fractions in Decimals, *viz.* primes and seconds, which is one prime and 5 seconds, by which divide 65400, makes 4360 Dollars at 3 shillings a piece.

Example.

[illegible]	1 *Dollars.*
65400	(4360
15555	
111	

In 756 pound how many Dollars of 3 shillings 9 pence a piece? Adde 4 Cyphers to 756, makes 7560000; which divide by 1875, which is 3 shillings 9 *d.* in Decimals, makes 4032 Dollars. Behold the Example following.

Example.

Example.

```
    375        Dollars.
 7560000      (4032
 1875555
  1 777
   188
    1
```

If I do sell 346 yards of Velvet for 298 pound, 8 shillings, 6 pence, how do I sell one yard? Answer, divide the price by the quantity of yards in Decimals, makes 1625 fourths, or in Coin 17 shillings, 3 pence for the price of one yard.

Example.

```
     1
    87
  21 663      1.2.3.4
 298|4250    (8 6 2 5
  346666
   3444
    33
```

Makes 17 shillings 3 pence a yard.

A Merchant would buy severall sorts of Spices of severall prices, to wit, of 3 shillings a pound, of 2 shillings, of 2 shillings 3 pence, of 1 shilling 7 pence, and of 2 shillings, 2 pence

pence a pound, and would have of each a like quantity, for 324 pound, the Queſtion is, how many pound he muſt have of each? Firſt, adde the prices into one ſumme, makes 11*s.* by which divide 324*l.* makes 589, 1:11 of a pound, and ſo many pound muſt he have of each ſort.

A Goldſmith ſent his ſervant to the Tower of *London*, to fetch him 415*l.* 18*s.* 9*d.* in pieces of 6*d.* of 4*d.* of 3*d.* of 2*d.* of 1*d.* and of one half penny, and bad him bring of each ſort a like quantity: Firſt, adde all your coin makes 16*d.* half penny, which in Decimals is 6875 fifths; by which divide 415|9375 fourths, makes 6050 pieces of each ſort.

Example.

24
5x59375 (6050 pieces of each ſort.
6875555
68777
688
6

Rules of Practice in Decimals.

Set your price given in the Decimall Table of an Unite, be it yard, ell, piece, or pound, and by the price given, multiply the number of

of yards, ells, pieces, or pounds, and the Product will be the summe that you seek, if you do but marke out the prime line, as shall appear by examples following.

1 *Example.*

If one pound weight of small Ginger cost 7 pence half penny, what will 112 pound weight cost? Finde for 7 pence halfe penny 3125 fifths, which multiply by 112 pound, makes 350000; from which cut off five figures to the right hand by the prime line, and the summe is 3 pound, 5 primes, or 3 pound, 10 shillings, because your multiplicand hath 5 Fractions.

Example.

```
        2.3.4.5.
        ---------
        3125
         112        1.2.3.4.
        ---------   171|2500
        6250        ---------
       3125         makes 171|l.|5s.
     3|125
     ---------
     3|50000
```

How to finde the price of any Unite in any place, of 10, or 100, or 1000, the price of one being given.

If the price of a unite be given at any rate, and from thence you desire to know, what 10, or 100, or 1000, or 10000 will cost at that rate: or otherwise, if you desire to know, if you do gain any rate desired by the pound, and would know at what rate it will be in the 100 pound, or upon exchange from place to place, the exchange of 1 pound being given, you desire to know, what 100*l.* will amount unto? Place your rate or gaine given, in Decimals by help of the Table, and then adding of one, two, three, or more, cyphers, cutting off your prime line, you shall know your desire marking the denominations of your fractions, if the least to the left hand be primes, seconds, thirds, fourths, fifths, cutting off your prime line so many figures from the right hand.

2. *Example.*

If 1 *l.* sterling be 1 *l.* 14 *s.* 3 *d.* Flemish, what is 100 *l.* sterling worth? Place 1 *l.* 14 *s.* 3 *d.* in Decimals, makes 1 | 7125 fourths: then because 100 pound hath two cyphers, makes 1712500: then cutting off

4 figures

4 figures to the right hand, you shall finde 171 pound 5 shillings for 100*li.* sterling, to make as appeareth before.

If one ell of Cambrick cost 7*s.* 6*d.* 3 farthings, what will 100 ells cost at that rate? Place 7 shillings, 6 pence, 3 farthings in decimals, makes 378125 sixths, and adding two cyphers for 100, makes 37812500: from which cut off 6 figures to the right hand, makes 37*l.* 16*s.* 3*d.* for the summe that 100 ells will cost.

3. *Example.*	4. *Example.*
1.2.3.4.5.6	1112|5000
37|812500	
Makes 37*l.* 16*s.* 3*d.*	

If one pound or piece cost 1 pound 2 shillings 3 pence, what will 1000 pieces cost? Set 1*l.* 2*s.* 3*d.* in Decimals, makes 1\|1125 fourths, to the which adde cyphers, because 1000 hath 3 cyphers, and from the totall cut off 4 figures, makes 1112 pound, 10 shillings, as in the fourth example above.

If one ell of Holland cost 3*s.* 3 *d.* what will 343 ells cost? Multiply 343 by 3 *s.* 3 *d.* in Decimals, which is 1625 fourths, makes 55 pound 14 shillings 9 pence.

5 *Example.*

5 Example.

1.2.3.4

1625	
343	
4575	
6 500	
48 75	
55 7375	

6 Example.

1.2.3

972	
775	
4	860
68	04
680	4
753	300

If one yard of Velvet coſt 15*s.* 6*d.* what will 972 yards coſt? Find for 15*s.* 75 ſeconds; then for 6*d.* finde 25 thirds; totall is, 775 thirds, by which multiply 972, makes 753*l.* 0*s.* as above in the ſixth example.

If one yard of Velvet coſt 17 *s.* 7 *d.* 3 *q.* what will 857 yards coſt? Firſt find 17 *s.* to be 85 ſeconds, then 7 *d.* 3 *q.* makes 322916, totall is 8822916; which multiply by 857, makes 756*l.* 2*s.* 5*d.* 3*q.*

7 Example.

1.2.3.4.5.6.7

8822916	
857	
6	1760412
44	11458 0
05	83328
56	1239012

8 Example.

1.2.3.4

1375	
758	
1	9000
11	875
166	25
180	0250

If one Dollar be worth 4 *s.* 9 *d.* what are 758 Dollars worth in sterling mony? Multiply 4 *s.* 9 *d.* which is 2375 fourths, by 758, makes 180 pound, 6 pence, as in the eighth example above.

The price of any number of yards, ells, pieces, or pounds given to finde the price of a unite.

If the price of any number of yards, ells, pieces, or pounds, be given, set them down in Decimals, adding 1, 2, or more cyphers, if need require, and divide that sum, or price by the number of the yards, ells, pounds, or pieces, and the quotient is the price of a unite in whole numbers, primes, seconds, and thirds, without reduction, as shall appear by examples following: and in this manner you may know what sum of money was lent if the principall and interest be given at any rate in the hundred; or you may know if the rate of 1 *l.* exchange be given for any place you may know the value of 100 of that coin in that mony given; and by this rule is to be abbreviated almost all operations of Arithmetick, by finding the value of a unite in any place desired.

If 542 ells of cloth cost 22 *l.* 4 *d.* ob. what cost 1 ell at that rate? Divide 22 | 01875 fifths by 542, makes 40615 sixths, or in Coin 9 *d.* 3 farthings for the price one ell cost.

Exampl

1 *Example.*

```
   127
  33351        2 3.4.5 6
22018782      (4 0 6 2 5
 5422222
  84444
   555
```

If 345*l.* gaine 79*l.* 12*s.* what doth 1 *li.* gain? Divide 76600000 by 345 *li.* makes 222028 sixth, or in Coin, makes 4 *s.* 5 *d. ob.* almost, that 1 *li.* doth gain, as in the example following.

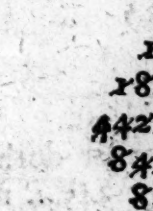
2 *Example.*

```
     412
   7 761
  761010        1.2.3.4.5.6
 76600000      (2 2 2 0 2 8
 3 45 55 5 55
   344444
    3333
```

If 756 *li.* 3 quarters, 24 *li.* of Sugar cost 4421*l.* 12*s.* what did 1 pound weight cost, accounting 112 pound to the hundred? Reduce 756*l.* 3 quarters, 24*l.* in pounds suttle, accounting 112 pound to the hundred, makes

makes 84780 *l.* then divide 44211 *l.* 12 *s.* by 84780; makes 5215 fifths, or 12 pence, half penny one pound.

3 *Example.*



If I ſell 1000 pieces of Cambrick for 700*li.* how do I ſell one piece? Divide 1000 by 700 makes 1 pound, 42857 fifths 1 pound 8 ſhillings 6 pence 3 farthings, as in the example following.

Example.

If one pound ſterling be 1 pound, 14 ſhillings, 3 pence Flemiſh, what is 1 pound Flemiſh worth? Divide 1 pound with cyphers by 17125, makes 11 ſhillings, 8 pence, 1 farthing almoſt.

5 *Example*

5 Example.

```
   1
   661
 1 37525        1.2.3.4
 1000000000     (5 8 3 9
  17125555
   171222
    1712
     17
```

If 1 *l.* sterling be 1*l.* 14*s.* 7*d.* *ob.* Flemish, what is 100*l.* Flemish worth in sterling money? Divide 100 by 1|73125 fifths, which is 1*l.* 14*s.* 7*d.* *ob.* in Decimals, makes 57*l.* 15*s.* 3*d.*

6 Example.

```
    41
   1079
  131987
  13438558        l. 1.2.3
 1000000000     (57 |7 6 2
  173355555
   1731112
    17333
     177
      1
```

The Golden Rule in Decimals.

If the number given be pounds, shillings,

and pence, set them out in Decimals, and also your number of yards, ells, pieces, pounds, or any other numbers, set them out also in Decimals, and then without reduction, multiply the third number by the second, and divide by the first, according to the instructions of Multiplication and Division in the former part of this book and the quotient will be the third number sought.

1 Example.

If 34 ells of Canvas cost 1 pound 4s. what will 756 ells cost at that rate? Multiply 756 by 1 pound, 2 primes, makes 907|2 primes which divided by 34, adding cyphers, makes 26|6823 fourths, or in Coin; 26 pound, 13 shillings 8 pence.

Example.

756		
12	2 1	l. 1.2.3.4
	223882	(26|6823
1512	072000	
756	3444444	
	33333	
9072		

If 112 pound of Indico cost 34 pound, 13 shillings, what cost 789 pound subtill, accounting 100 pound to the hundred? Multi-

pl

ply 34|85 seconds by 789; makes 27496 *li.* 65 seconds; which divided by 112 pound, makes 245 pound, 5058 fourths, or 10 shillings 1 penny farthing.

Example.

1.2			
3485			
789	65		
30126	65	*l.*	1.2.3.4
31365	27496	65000 (245	5058
27880	xxxx	xxxx	
24395	xxxx	xxx	
27496 | 65	112	1x	

If 981 ells of cloth cost 94 pound, 13 *s.* 6 *d.* what cost 2943 ells at that rate? Divide the third number by the first, and by the quotient multiply the second, and the product will be the answer sought.

		1.2.3
	94	675
		3
2943 (3		
981		
		284|025

Makes 284 *l.* 6 *d.*

If 112 pound of Sugar cost 5 pound 3 shillings, 9 pence, how many pounds will 124

pound buy at that rate? Divide 5|1875 fourths by 112 pound, to find the price of 1 pound, makes 46316 sixths, or in Coin 11*d.* 1:10 of a penny almost for the price that one pound cost. Secondly, divide 124*li.* by the price of one pound; *viz.* by 46316 sixths, makes 2677|3 primes, and so many pound he shall have for 124 pound.

If one yard Broad-Cloth cost 16*s.* 9*d.* how many yards shall 56 pound buy at that rate? Divide 56*l.* by 16*s.* 9*d.* the price of one yard, makes 66 yards, 9:10 almost.

Example.

9
250
375000 *yards.* *yard.*
560000 (66 86:100
8775598
83777
833
8

If 7 yards 1:2 of cloth cost 9 *s.* what will 8 yards 1:3 of a yard cost? Multiply 9 shillings, or 45 seconds, by 8 1:3, makes 375: which divide by 7 yards 1:2, or by 7|5 primes, makes 5 primes, or 10 shillings.

Example

Example.

1
4|5
8, 1:3

360		3750 (5,	or 10
15		75	
375			

If 5 yards 1:2 coſt 4*s*. 8*d*. 1:4 of a penny, or 56, 1:4, what will 30 yards coſt at that rate? Set your 56 *d*. 1:4 in *Decimals*, makes 56|25 ſeconds, which multiply by 30, makes 1687|50 ſeconds; which divided by 5 yards one halfe, or 5|5 primes, makes 306 pence 8:10 of one penny for the price of 30 yards, as in the example following.

Example.

56|25	1234|1	*d*.	1
30	x687|50	(306	8
1687|50	5555		
	555		
	or 25*s*. 6*d*. 4:5 of a *d*.		

If 34 ells 3:4 of Holland coſt 3 pound, 6 ſhillings 1 penny halfe penny, what will 756 ells 1:2 coſt at that rate? Multiply 3 pound, 6 ſhillings, one penny halfe penny,

which is 3|30621 fifths by 756|5 primes, makes 2501|178125, which divided by 34 ells, 3:4, or by 34|75, makes 71|9763 thirds, or 71 pound, 19 ſhillings 6 pence.

Example.

1.2.3.4
3|3625
7565

168125
201750
168125
235375

2543|73125

6|93
114|28 *l.* 1.2.3
2543|73125 (73|200
34755555
3477777
344444
33

If 346 pound, 10 ſhillings, gain 32 pound, 8 ſhillings, what will 75 pound gain at that rate? Firſt multiply 324 primes by 75 makes 24300 prime; which divided by 346|5 primes makes 7|0129 fourths, or 7 pound, 3 pence for the anſwer.

Example

Example.

```
   324          |3
    75          1042
 ------        4 | 5350   l. 1.2.3.4
  1620       2430 | 00000 (7|0 1 2 9
  2268        346 55555
 ------        346 666
  2430|0       3441
                33
```

The same Question wrought a second way.

Divide 32|4 primes, by 346|5 primes, adding 5 cyphers, and the quotient will be 935 fourths; which multiply by 75, makes 7 *l.* or 0125 fourths, which doth not want one farthing of the former summe.

The same Question wrought another way.

Divide 75 pound, adding 5 Cyphers by 346 pound, 5 primes, and the quotient will be 21645 fifths? which multiply by 32|4 primes, makes 7012980; from which abate 6 figures to the right hand, because of your 6 fractions and the remainer will be 7*l.* 0126 fourths, &c. as before. And in this manner you may work any question in the Rule of Three, 3 severall wayes, and prove the work one by the other.

If 12 ſhillings do buy 74 pound of Ginger, how much ſhall I have for 100 pound? Divide 7400, which is the product of 74 by 100, by 12 ſhillings, or 6 primes, and the quotient will be 1233 pound, 1:3, and ſo much Ginger ſhall I have for 100 pound at that rate; or otherwiſe divide 100 pound by 6 primes, makes 166, 2:3 which multiply by 74, makes 12333 pound, 1:3, as before.

Brieſe Rules how to abbreviate your worke in the Golden Rule, by marking the proportions between the numbers given.

When as any queſtion is propounded in the Golden Rule, mark what proportion is between the firſt and ſecond numbers, or beeween the firſt and third numbers, or beeween the third and ſecond; for if you eſpy them in any proportion, the Queſtion demanded is very ſpeedily anſwered, upon the firſt ſight; or yet if you ſee them not exactly to be even proportionals, yet you may ſubſtract the firſt from the third, once, twice, or three times, or more, and ſo often take the middle number towards the anſwer to the queſtion, and then you need not to multiply by your whole third number, as you ſhall ſee by examples following.

1 *Example.*

1 *Example.*

If 34 ells coſt 2 pound 4 ſhillings 1 penny, what will 340 ells coſt? Here comparing the firſt and third numbers, one with another, I find the third doth contain the firſt 10 times, wherefore I multiply 2 pound 4 ſhillings 1 penny, by 10, and the totall is 22 pound 10 pence, the Anſwer.

2 *Example.*

If 82 ells of cloth coſt 4 pound 2 ſhillings, what will 324 ells coſt at that rate? Here I finde 4 pound 2 ſhillings in Decimals to be one half of 82, but it ſtandeth one roome leſs in value then 82 doth, ſo I conclude, that half of 324 one roome leſſe is 16 pound, 2 primes, or 4 ſhillings, the Anſwer.

3 *Example.*

If 345 ells of Holland coſt 34 pound, 10 ſhillings, what will 789 ells coſt at that rate? Set downe 34 pound, 10 ſhillings in Decimals, makes 34 pound, 5 primes, which is the firſt number placed but 1 room lower; therefore I ſay, if 345 ells coſt 34 pound, 5 primes one roome more to the right hand, then the third number alſo will coſt 78 pound, 9 primes one room more to the right hand, which is 78 pound 18 ſhillings.

ample.

4 Example.

If 12 ells of cloth cost 2 shillings, 4 pence, 4:5 of one penny, what will 356 ells cost? place 2 shillings 4 pence 4:5 in Decimals, makes 1 prime, 2 seconds, or 12 seconds, which is the same number, but it stands two rooms lower; therefore I conclude, that 356 els cost the same numbers two rooms lower, which is 3 *l.* 11 *s.* 2 *d.* 2:5 of 1 *d.*

If 12 ells cost 12 seconds, what will	1.2 356 | 00 356	*l.* 1.2 or 3. 5 6

5 Example.

If 130 ells of cloth cost 26 pound, what will 3759 ells cost at that rate? I find the second number to be twice the first, but it stands one place nearer the right hand; therefore I conclude, that the third number will cost twice as much in his lower room, which is 751 pound 16 shillings.

If 130 cost 26 pound, what cost 3759?

130 26	3759 375 | 9 2	*L* 751	8
	751 | 8		

6 Example.

6 Example.

If 75 ells 1 half coſt 7 *l.* 11 *s.* what will 328|12 ſeconds coſt? Set them down in Decimals, and you ſhall find them to ſtand thus, 75|5 primes for the firſt number, and 7|55 ſeconds for the ſecond number, which is the ſame one roome nearer the right hand: ſo I conclude, that the third number will coſt 32|85 ſeconds, which is 32 pound 17 ſhillings.

Example.

Ells.	1.2		1.2
75	5	328	50
7	55	32	85

The anſwer. 32 *l.* 17 *s.*

1 Example.

If 356 ells of Canvas coſt 38 pound, 12 ſhillings 1 penny, what will 740 ells coſt at that rate? Firſt, divide 740 by 356, the quotient will be 2, and therefore I take twice the price given for that quotient, and then whereas before I ſhould have multiplyed 38 pound, 12 ſhillings, 1 penny by 740, I ſhall need to multiply it but by 28 the remainer, and divide it by 356, makes 3|0368 fourths, to be added to the former ſum, and the totall will be as in the example following.

Example.

Example.

	l.	*s.*	*d.*			*d.*
	38	12	1	38	6	1
28	2			2	8	
740 (2						
356	77	4	2	308	8	
	3	0	8 | 8:4	772	1166	
	80	4	10 | 1:4	*l.* 1080	9166	

300			
224376	*l.* 1.2.3.4	*l.*	*d.*
1080 | 9166	(3 | 0 3 6 8.	or 3	9 almost
356666			
35555			
333			

Here in the last example, I multiply 38 pound, 6 primes, by 28, omitting the penny not setting it out in Decimals, and the Product is 1080 \| 9 primes: then multiply 1 penny by 28, makes 28 pence, which is one prime, 166 fourths, and the totall was 1080 pound, 9116 fourths, as in the example: and in this manner you may save a great labour in multiplying your number of pounds and shillings first, and then multiply your pence by themselves, and adde into the rest in primes, seconds, &c.

2 *Example.*

2 *Example.*

If 17 ells of Holland cloth coſt 3 *l.* 2 *s.* 5 *d.* what will 515 ells coſt at that rate? Divide 515 by 17, makes 30, by which multiply 3 *l.* 2 *s.* 5 *d.* makes 93 *l.* 12 *s.* 6 *d.* then the remainer of your diviſion will be 5 ells, by which 5 multiply 3 *l.* 2 *s.* 5 *d.* makes 15 *l.* 10 *s.* 1 *d.* or in Decimals 15|50416 fifths; which divided by 17, makes 912 thirds; or 18 *s.* 3 *d.* almoſt; which added to 93 *l.* 12 *s.* 6 *d.* makes the anſwer to be 94 *l.* 10 *s.* 9 *d.* and ſo here inſtead of multiplying 3|120833 ſixths by 515, and dividing by 17 I have ſaved more then half the work.

Example.

		l.	*s.*	*d.*			
5							
515 (30	3	2	5	3	2	5
17	30			5		
17						
	93	12	6	15	10	1
		18	3			
	94	10	9			

	33	1.2.3.4.5
15	50416	(91200
	27777	
	2222	

3 *Example*

3 Example.

If 7 pound by 100 pound waight of ſugar, how many pound weight will 156 buy me at that rate? Divide 156 by 7, makes 22,2:7, by which multiply 100, makes 2228 pound, 4:7.

4 Example.

If 356 pieces of Callicoes coſt 300 pound, 15 ſhillings, how much will 917 pieces coſt at that rate? Divide 917 by 356, makes in the Quotient 2; therefore take the price given twice, and there will remain after your diviſion 205 by which multiply 300|75 ſeconds, makes 61653|75 ſeconds, which divided by 356, makes 173 pound, 18 ſeconds, or 173 pound, 3 ſhillings, 8 pence to be added to the former ſum 601 pound, 10 ſhillings, makes 774 pound, 13 ſhillings, 8 pence for the queſtion.

The ſame queſtion wrought without Reduction in Decimals.

If 356 coſt 300|75 ſeconds, what 917? Multiply 300|75 ſeconds by 917, makes 275787|74 ſeconds; which divide by 356, makes 774|68 ſeconds, or 774 pound, 13 ſhillings, 8 pence, as before the proof.

Example,

Example.

300 | 75		23	
9 | 17		1642	
		269632	l. 1. 2
2105 | 25		275787 | 75	(774 | 68
3007 | 5		3566866	
270675		355555	
		333	
275787 | 75			

Example.

If 179 pound of Indico cost 60 pound, 13 shillings, 5 pence, what will 716 pound cost at the same rate? Divide 716 by 179, makes 4 in the quotient, and nothing will remain: wherefore I conclude, that 4 times 60 *l.* 13 *s.* 5 *d.* which is 242 *l.* 13 *s.* 8 *d.* and is the answer to the question demanded.

6 *Example.*

If 36 pound of Cloves cost 11 pound, 6 shillings, how many pound shall I have for 354 *l.* divide 11 \| 3 primes by 36, makes 3 1388 fifths; which multiply by 354, cutting off figures for the 5 fractions, makes 111 pound, 11352 fifths, or 2 shillings, 3 pence, 1 farthing, for the answer.

Fellowship

Fellowship in Decimals.

To work the Rule of Fellowship in Decimals, gather the whole number of all the moneys disbursed into one sum, and then divide the mony gained or lost by that sum, and multiply that quotient so found by each severall Partners stock disbursed, and the Products will be each severall mans gain or loss.

Example.

Four Merchants made a Company: *A.* put in 60 pound, *B.* 80 pound, *C.* 120 pound, *D.* 140 pound, and they gained 72 pound; the Question is, what part each Merchant must have of the gains? First, the Totall sum of all their moneys disbursed was 400 pound, wherefore according to the Rule I divide 72 pound adding cyphers unto it by 400, and the quotient is one prime, 8 seconds, by which I multiply each severall mans stock disbursed, and I find *A.* shal have 10 pound, 16 shillings; *B.* 14 pound 8 shillings; *C.* 21 pound 12 shillings, and *D.* 25 pound, 4 shillings; Totall is 72 pound, as in the example.

Example.

Example.

60	80	120	140
18	18	18	18
480	640	960	1120
60	80	120	140
10|80	14|40	21|60	25|20

	l. 1.2
	10|80
	14|40
	21|60
	25|20
	72|00

3 1.2
7200 (18
4400

2 *Example.*

Four Merchants made a Company, and set forth a ship to sea, which cost them 3616 pound, 13 shillings; *A.* must pay 1:3 of the mony; *B.* 1:4, *C.* 1:5, *D.* 1:6, the question is, what each man must pay of the said sum? Take a number wherein the like parts may be had, which in the former book of vulgar Arithmetick, I find to be 60, whereof 1:3 is 20, and 1:4 is 15, and 1:5 is 12, and 1:6 is 10, the totall is but 57: wherefore I di-

I divide 3616|65 by 57, and the quotient is 63|45 seconds, which I multiply by 20, and I find *A.* shall pay 1269 pound; then I multiply by 15, and *B.* shall pay 951|75 seconds; and by 12, and *C* shall pay 761|4 primes; and by 10, and *D.* shall pay 634|5 primes, the totall is 3616|65 seconds, the proof of the work.

Example.

l. 1.2	*l.* 1.2	*l.* 1.2	*l.* 1.2
63|45	63|45	63|45	63|45
20	15	12	10
1269|00	951|75	761|40	634|50

3 *Example.*

The Merchants made a Company: *A.* put in 56|6 primes; *B.* put in 30|8 primes; *C.* put in 120|4 primes, and they gained 58 *li.* 16 shillings, or 58 pound 8 primes; what must each man have of the gains? First, the Totall disbursed is 216 pound, 4 primes, and the which I divide 58 pound; 8 primes, by the quotient is 27197 fifths for one pound gain; which I multiply by each severall mans mony disbursed, and I find *A.* shall have 15 pound, 7 shillings, 10 pence halfpenny: *B.* 10 pound, 14 shillings, 3 pence, 3 farthings;

3 farthings; *C.* ſhall have 32 pound, 13 ſhillings, 9 pence, 3 farthings, the Totall is 58 pound, 16 ſhillings, the proof.

Example.

	l.	1.2 3.4.5,6	*l.*	*s.*	*d.*	*q.*
A.	15	393502	15	7	10	2
B.	10	715618	10	14	3	3
C.	32	690794	32	13	9	3
Tot.	58	799914	58	16	00	0

4 *Example.*

Three Captains agree together to divide a ſpoil or booty, which they had taken, containing 7851 *li.* in this ſort, *A.* is to have 1:2; *B.* 1:3; *C.* 1:4; the Queſtion is, what each mans ſhare ſhall be? Find a number which hath ſuch parts in it, *viz.* 12, whereof 1:2 is 6, 1:3 is 4, and 1:4 is 3, which in one ſum makes 13; therefore divide 7851, adding Cyphers to it by 13, and the Quotient will be 603 pound, 92307 fifths; which multiply by 6, 4, and 3, and you ſhal find, *A.* ſhal have 3623 pound, 5384 fifths; *B.* ſhall have 2415 pound, 69228 fifths; *C.* ſhall have 1811 pound, 76921 fifths: the Totall is 7850 pound, 99991 fifths

fifths, which doth want but 1 fourth of 7851 pound, which in value is but 3.125 parts of 1penny, and this example is to be wrought without the Golden Rule. Behold the proof of the work.

Example.

	l.	1.2.3.4.5	*l.*	*s.*	*d.*	
A.	3623	5 3 8 4 2	3623	10	9	1
B.	2415	6 9 2 2 8	2415	13	10	1
C.	1811	7 6 9 2 1	1811	15	4	1
	7850	9 9 9 9 1	7851	00	00	0

The same example wrought another way.

After you have divided 7851 pound by 13 find in your Decimall Table what the quotient is in coyn, makes 603 pound, 18 shillings, 5 pence, *ob.* which multiply by 6, 4 and 3, and their Totall in one sum is the answer: as before.

l. 1

l.	s	d.		l.	s	d.	
603	9	5.	ob.	603	9	5	ob.
	6				4		

3623	5	9	00	2415	65	10	0
		l	s	d.			
		603	9	5	ob.		
			3				
		1811	75	4	ob.		

These three severall Products added into one sum, makes 7850 *l.* 19 *s.* 11 *d.* wanting but one penny in the whole sum, which is the defect of the Decimals, which cannot be exactly set out in coyn, but it will serve to answer a Question of one million with one penny error at the most.

5 *Example.*

Three men made a stock together, & they gained 244 pound, 8 shillings: *A.* put in 315 pound 7 months, *B.* 408 pound 10 months, *C.* 500 pound 3 months; now the question is, what each man must have of the gains? First, multiply each mans stock by his time, and gather all the Totalls into one sum, and they make 7785; by which divide your gains, 244 pound, 4 primes, and the quotient

tient will be 31393 ſixths which multiply by the ſeverall products of each mans mony and time, and the totall of each ſeveral product is the ſum defired for each mans part of the gain.

Example.

A. 69	22836	69	4	6	3
B. 47	08800	47	1	9	1
C. 128	08210	128	1	8	0
244	40046	244	8	0	0

Poſition in Decimals.

Three Merchants bought a parcell of Linnen cloth coſt them 757 pound, 17 ſhillings whereof *A.* muſt pay 1:4; *B.* 1:5; *C.* 1:8; what muſt each man pay of this ſum? I take 20 for a number, wherein I can have thoſe parts, *viz.* 1:4 of 20 is 5, and 1:5 of 20 is 4, and 1:8 of 20 is 2 pound, 5 primes, or 2 one half, their totall is 11 pound 5 primes; or 11 1:2; by which I divide 757 pound, 85 ſeconds, and the Quotient is 65 *l.* 9 primes, which I multiply by 5 for *A.* make 329 *l.* 10 ſhillings; *B.* 263 pound 12 ſhillings; *C.* 164 pound 15 ſhillings: the totall is 757 pounds, 85 ſeconds.

1 *Example.*

1 *Example.*

A.	B.	C.		
l. 1	*l.* 1	*l.* 1		*l.* 1 2
65 | 9	68 | 9	65 | 9		164 | 75
	4	2	1 2	263 | 6
				239 | 5
329 | 5	263 | 6	164 | 75		
				757 | 85

2 *Example.*

A Ship-carpenter bought 300 timber trees of a Gentleman, and was to pay for the first 100 a sum of mony unknown, for the second twice as much as for the first 100, and for the third 100 of trees he was to pay thrice as much as he paid for the first, and the whole 300 of trees cost him 724 *li.* 12 shillings, the Question is, what each hundred cost him severally? To work this Question, or any other of like nature suppose a unite, or one pound for the first 100, then he must pay 2 pound for the second 100, which is twice as much, and then also he must pay 3 pound for the third 100, which is three times as much as the first: but yet 1 pound, 2 pound, and 3 *l.* makes but 6 pound, and it should be 724 *li.* 12 shillings; so that now whereas in the former

former Book I taught you to resort to the Golden Rule for the answer, saying, If six pound come of my position one pound, of what comes 724 pound, 12 shillings? Now always supposing a unite for your first number, you shall save a multiplication; and so dividing of 724 pound, 6 primes by 6, I find the first 100 of trees cost him 120 pounds, 15 shillings, 4 pence, and the second 100 cost him 241 pound, 10 shillings, 8 pence, and the third 100 cost him 362 pound 5 shillings; the totall makes 724 pound, 12 shillings; behold the work.

Example.

| | | |

as *A.* *B.* and *C.* now the question is, what each man must pay of this sum? I suppose *A.* must pay 1 pound, then *B.* must pay 2 pound which is twice as much as *A.* doth pay; and *C.* must pay 6*li.* which is thrice as much as *B.* doth pay; and then *D.* must pay 9 pound, which is as much as all the other three doe pay; but their totall is but 18 pound, and it should be 541 pound, 16 shillings: wherefore I divide 541 pound, 8 primes, by 18, and the quotient is 30 pound, 1 prime, or 2 shillings, for the first part. Then *B.* must pay 60 pound, 4 shillings; *C.* 180 pound, 12 shillings; and *D.* 270 pound 18 shillings: their totall makes 541 pound, 8 primes; behold the work.

Example.

l.		1		*l.*	*s.*
541 | 8	(30 |	1	*A.*	30	2
188			*B.*	60	4
22			*C.*	180	12
			D.	270	18
			The proofe.	541	16

4 Example.

A Cisterne of water containing 600 gallons is filled with water, and hath 4 severall

Cocks to empty the same, whereof if they be all set open at once, the Cistern will be empty in 24 houres: now the second Cock will avoid twice as much as the first Cock in 24 houres, and the third will avoid three times as much as the first, and the fourth Cock 5 times as much as the first: the question is, how many gallons each Cock doth avoid in 24 houres of the said 600 gallons?

I suppose the first Cock will avoid one gallon, then the second must avoid 2, and the third 3, and the fourth Cock 5: but yet they are but 11 gallons, and they should be 600 gallons: wherefore dividing of 600 by 11 the quotient is 54 gallons, and 6:11 of a gallon for the first Cock. Behold the work in the example following.

Example.

1.1	86 *Gallons.*			*Gallons.*
2.2	66 (54 6:11		1.	54.
3.3	11		2.	109.
4.5	1		3.	163.
			4.	272.
01				
11				2
	22 (2	*The proofe.*		600
	11			

Of Gain and Losse in Decimals.

If a Broad Cloth 28 yards long be sold for 14 shillings a yard, and the seller doth gain 10 pound in the 100 ready mony, what cost that broad Cloth? First by Practice find the price of the 28 yards, at 14 shillings a yard, makes 19 pound, 6 primes, or 19 pound 12 shillings; divide 19 pound 6 primes by 110, pound, makes 17 pound, 8 18 18 fifths, or in Coin, 17 pound, 16 shillings, 4 pence, 3 farthings.

1 Example.

28	8 9 2 9	*l.*	1.2.3.4.5
7	2 | 9 8 8 8 0 0 0 (17	8	1 8 1 8
	2 1 1 1 1 1 1 0		
19 | 6	2 1 1 1 1 2		
	2 1 1 2		

Secondly, if 28 yards cost 17 pound, 8 18 fifths, what did one yard cost at that rate? Divide 17 pound, 8 18 18 fifths by 28 yards, and the quotient will be 63636, or in Coin 12 shillings 8 pence 3 farthings, for the price that one yard cost.

Example.

```
  1111
 107070   1.2.3.4.5
17|81818 (63636
 288888
  2222
```

Thirdly, for the proof of this work, say, If one yard cost 63636 fifths, how may I sell it to gain 10 pound in the hundred ready mony? Take the tenth part of 63636 fifths, makes 63636 sixths; which added into one Totall, makes 69999 fifths, which doth want but one fifth of 7 primes, or 14 shillings, which proves all the former works to be true.

Example.

```
1.2.3.4.5.6
 63636
  63636
-------
 699996
```

2 *Example.*

A Merchant doth deliver mony at Interest for 9 months, after the rate of 12 pound in the hundred, for 12 months simple interest,

reſt, and at the end of 9 months doth receive for intereſt 87 pound; the queſtion is, what was the ſum lent? Anſwer: becauſe the intereſt of 9 months at 12 pound in the hundred is 9 pound, divide 8700000 by 9 pound, and the quotient is 966 pound, 6666 fourths, or 966 pound, 13 ſhillings, 4 pence, the ſum lent.

Example.

6666	*l.*	1.2.3.4
8700000	(966	6666
999		

3 Example.

If 13 pieces of Canvas coſt 17 pound, 12 ſhillings, how may I ſell them to gaine 8 pound in the hundred? Multiply 17 pound 6 primes by 8, adding two cyphers, makes 19 pound 8 thirds, or 19 pound 2 pence almoſt.

The proofe of the former example, If 17 pound 12 ſhillings, gain 1 pound 8 ſhillings 2 pence, what will 100 pound gaine at that rate? Multiply 1 pound, 8 ſhillings, 2 pence, or in Decimals, 1 pound 408 thirds, by 100 makes 140 pound, 800 thirds, which divide by 17 pound 6 primes, makes 8*li.* for the rate that 100 pound will gain; which ſhews the former worke to be truly wrought.

Example.

l.	1.2.3			
17	600			
	8	0	*l.*	
		240	800	(8 *the proofe.*
1	408	240		
19	008			

4 *Example.*

If in one ell of cloth sold for 3 shillings, there be gained after the rate of 12 pound in the hundred for 12 months, how should that ell have been sold to gain 17 pound in the hundred for 12 months? Multiply 17 *li.* by 3 *s.* which is one prime, five seconds, and divide the Product by 12, makes 2125 fourths, or in coin 4 *s.* 3 *d.* and so much must it have been sold for to gaine 17 *l.* in the hundred.

Example.

17			
15			
	136	1.2.3.4	
85	255000	(2125	or 4 *s.* 3 *d.*
17	12222		
	212		
255			

Secondly,

Secondly, if 3 shillings give 12 pound, what will 4 shillings 3 pence give? Multiply, 2125 fourths by 12, and divide by 15 seconds, and the quotient is 170 pound, the proofe of the last example.

Example.

1.2.3.4		
2125	100	l.
12	2550	(170
	150	
5550	0	

5 Example.

A Merchant sold 24 Cloths, which cost him 342 pound, wherein he lost after the rate of 10 pound in the hundred, and tooke in exchange 560 pieces of Raisons at 24 shillings the piece, wherein he gained 10 pound in the hundred ready mony; now the question is, what his gaine or losse was, and what sum of mony he was to pay for the Raisons? First, 560 pieces of Raisons at 24 shillings a piece, is 672 pound, from which subtract 342 pound, leaves 330 pound to pay for the Raisons. Secondly, 672 pound, at 10 pound in the hundred, is 67 pound, 4 shillings for his gains by the Raisons. Thirdly, 342 pound lesse, 10 in the 100, is 34 pound,

4 shillings, to be deducted from 342 pound, and then take 34 pound, 4 shillings, from 67 pound 4 shillings, leaves his gaines more then his losse to be 33 pound.

Example.

pieces.

```
 560        672|
  12 ---------------------------------
---------------  67 | 2 gains        342||
672|0            34 | 2              ---------------
342|          ---------------          34|2 losse.
---------------  33|0 clear gaines.
330 to pay.
```

6 Example.

A Merchant receiveth for principall and interest 352 pound, wherein he gained 9 pound in the hundred for one year; now the Question is, what was the sum of mony lent? Divide 35200|000 by 109 pound, makes 322 pound, 9357 fourths, or 322 pound 18 shillings, 8 pence half penny, for the sum lent.

6 Example.

6 Example.

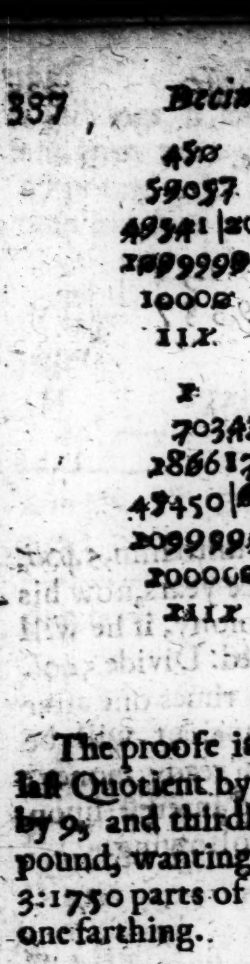
```
  1
  30368
 2522935          l.  1.2.3.4
35200|0000  (322|9357
109999999
 1000000
  11111
```

7 Example.

A Merchant hath owing unto him, 540*li.* to be paid at the end of three years, now his debtor will pay him ready mony, if he will abate him 9*l.* in the hundred. Divide 540*l.* with Cyphers by 109 three times one after the other, and the third Quotient will be the sum that he shall pay in ready money, abating 9*d.* in the hundred interest upon interest. Behold the work following.

7 Example.

```
  5413
1049541
54000|000  (49541200
 10999999
 100000
  1111
```



or 416l. 19s. 6d.

The proofe is made by multiplying the last Quotient by 9, and that Product again by 9, and thirdly againe by 9; makes 548 pound, wanting but one fifth, which is but 3:1750 parts of 1 penny, or 6.875 parts of one farthing.

8 *Example.*

A Merchant hath owing unto him 632 pound, to be paid at the end of 12 months, now his debtor will pay him ready mony, if he will abate him 12 pound in the hundred *per annum*. Divide 932 by 112 pound, and the

the quotient will be the sum of mony that will discharge the debt, abating 12 pound in the hundred.

Example.

395
748264 l. 1.2.3
63200|000 (564|285
11222|222
11111x
1111x

or 564l. 5s. 8d. ob.

9 Example.

324 pound was received for interest mony lent a Merchant Adventurer at 17 pound in the hundred 1 yeare, what was the summe lent? Answer: divide 32400 by 17, makes 1900 pound, and 1 : 17 of a pound.

10 Example.

If 358 ells of Holland cost, 124 pound, 1[illegible] shillings, how shall it be sold an ell to [illegible] 12 pound in the hundred ready mony? [illegible] first, multiply 124 pound 8 primes, by 12. adding 2 cyphers, makes 139 pound, 776 or in coin 139 pound, 15 shillings, 6 pence. Secondly, divide

divide 139 pound, 776 by 358, makes 3905 fourths, or 7 shillings 9 pence 3 farthings for the price to sell one ell to gain 12 pound in the hundred.

Example.

l.	1.2.3			
124	800		21	
	12		3235	1.2.3.5
		239	77760	(3905
14	976		358888	
			3585	
139	776		33	

11 *Example.*

If one ell of cloth cost 18 pence; how shall I sell 358 ells to gain 7 pound, 10 shillings, by the bargain, and at what rate in the hundred do I gaine? First, 358 ells at 18 pence an ell makes 26 pound, 17 shillings; to the which adde 7 pound, 10 shillings, the gains makes 34 pound 7 shillings, for to sell 358 ells to gaine 7 pound, 10 shillings by the bargaine. Secondly, divide 7 pound 500000 fixths by 26 pound, 85 seconds, and the quotient is 17 pound, 9346 fourths, or 27 *li.* 18 shillings 8 pence farthing, which is the rate

rate gained by the 100 pound of money.

Example.

```
 elles.
  358     d.
   75     18
 ----    ----
 1790          2578
2506           213055      l.   1.2.3.4
 ----          75000000(27 | 9 3 4 6
 26|850         2685555
  7|5           26888
 ----            266
 34|35 price.      2
```

12 *Example.*

How much Indico of 6 shillings 3 pence a pound will pay for 73 broad clothes at 16 pound 1 cloth; and to pay 60 pound in present money? First 73 broad cloths at 16 *li.* a cloth, makes 1168 pound, from which substract 60 pound, there will remaine 1108 pound; which divide by 6 shillings 3 pence, or 3125 fourths, and the Quotient is 3545 pound, 6 : 10 of one pound, and so much must he give of Indico for the clothes.

Example.

Example.

73	1		
16	188		
	14387		
438	1705509	l.	l.
73	1108|00000(3545	6:10	
	31255555		
1168	312222		
60	3112		
	33		
1108			

13 *Example.*

How many pounds of Cloves at 6 shillings a pound, and small Cinamon of 3 shillings a pound must be given for 36 Carseys at 4 pound 3 shillings a piece, to have of each a like number of pounds? Answer, 36 Carseys at 4 pound 3 shillings a piece, makes 149 pound, 8 shillings; which divided by the price of both, *viz.* 9 shillings, makes 332 pound of each sort.

The proofe: 332 pound of Cloves at 6 shillings a pound, makes 99 pound, 12 shillings; then 332 pound of Cinamon at 3 shillings a pound, makes 49 pound, 16 shillings the

the totall is 149 pound, 8 ſtillings, the given price of the 36 Carleys.

Example.

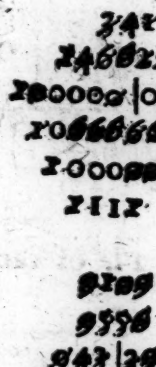
l.	12			
4	15			
	36			
		149		
24	90	14	4000	(332 *l.* of each.
124	5		4558	
			44	
149	4			

14 *Example.*

Of what principall came 1000 pound principall and intereſt, at compound intereſt in three years at 6 pound in the hundred? Divide 1000 pounds three ſeverall times by 206, makes 839 pound 61 ſeconds, or 839 pound, 12 ſhillings, 3 pence almoſt, which was the ſum lent at firſt.

Example.

Example.



15 *Example.*

If 34 Tun of Wine coſt 544 pound, how may a man ſel a Tun to gain 12 pound upon the hundred ready money? Firſt, finde the price

price of one Tun dividing 544 by 34, makes 16 pound for the price of one Tun which it cost: then multiply 16|00 by 12 pound, makes 17 pound, 92 seconds, or 17 pound 18 shillings 4 pence, 4.5 of a penny, for the price to sell one Tun of that Wine to gaine 12 pound upon the 100 pound.

```
                          1.2
20    l.          16|00
544  (16          |12
344
 3                1|92
                 17|92
```

How to work Gain and Losse in pence, and parts of pence or farthings.

Set out your number of pounds, shillings, pence, and farthings in pence, and in tenths of one penny; and for one farthing, set out 2 primes, 5 seconds, which is one fourth of a penny, and for two farthings set out five primes, which is one halfe penny; and for three farthings set down seven primes 75 seconds which is three quarters of one penny, and then they are apt for decimall operations, both for multiplication, division, or any

any other worke of Arithmetick, without reducing them into farthings, and there will be a great deal of labour saved in these kind of operations, as shall appear afterwards by the examples following.

1 Example.

What is the interest and principall of 100 pound, put forth at 10 pound in the 100 compound interest, for the space of 7 years, to be all received at the end of the yeares? First, put your 100 *li.* into pence, maketh 24000 pence, then work as in this example following, and you shall find it will amount unto 46769 pence, and 1:5 of one penny, which divided by 240 pence, makes 194 pound 17 shillings 5 pence, 1:5 of a penny, which is the summe that 100 pound will amount unto at interest upon interest in 7 yeares, at 10 pound in the hundred.

Example

Example.

	pence.	
100 pound makes ——	24000	
	2400	
1 Yeare ——	26400	
	2640	0
2 Yeare ——	29040	
	2904	0
3 Yeare ——	31944	0
	3194	40
4 Yeare ——	35138	40
	3513	84
5 Yeare ——	38652	24
	3865	224
6 Yeare ——	42517	464
	4251	7464
7 Yeare ——	46765	2104

121 *d.*
22107 *l.* |
467690 (194 8.
214440
222

Totall 194*l.* 17*s.* 5*d.* 1:5

2 *Example.*

2 Example.

A Merchant delivered 358*l.* at interest for 3 years, for 8*l.* in the hundred compound interest; the question is, what it will amount unto at the end of the terme? Put your mony into pence, makes 85920 *d.* which multiply by 8, adding 2 cyphers, and worke for 3 years, as in the example following.

Example.

		d.
358 pound is	85920	00
		8
	6873	60
1 Yeare	92793	600
	0000	008
	7423	488
2 Year	100217	08800
	00000	00008
	8017	36704
3 Year	108234	45504 *d.*

22 18*d.* *l.*

1082340 (450 | 9 or 450*l.* 19*s.* 6*d.*

44440

222

The

The proofe of the former Example in Decimals.

A certain Merchant received for principall and interest upon interest 450 pound 19 shillings 6 pence, which was for mony lent at 8 pound in the hundred for 3 years; now the question is, what was the summe lent? Place 450*li.* 19 shillings, 6 pence in Decimals, and you will find your third quotient will be 358 pound, wanting some few seconds, which proves the work good.

3 *Example.*

A Merchant lent 112 pound for 6 months at 17 pound in the hundred, for 12 months, the question is, what he shall receive? Put your money into pence, makes 2688 pence; marke out your prime line, as in the former examples, and adde 2 Cyphers, then multiply by 17, and take halfe that product for 6 months interest, and adde unto the principal, and the totall is the sum of pence which he shall receive for principall and interest at 6 months end.

Example.

Example.

142 pound is—	26880	00
	0000	17
	2688	6
	1881	0
	4569	6 *totall.*
	2284	8 *one halfe added.*
	29164	8 *the ſumme ſought.*

Makes 121 *li.* 10*s.* 4*d.* 4:5 of a *d.*

4 *Example.*

If a pound of Cinamon coſt 4 ſhillin ready mony, how may it be ſold to gain pound in the hundred to give 6 mont time? Set your 4 ſhillings in pence, mak 48 pence; then adde 2 cyphers, and mult ply by halfe the intereſt, and adde them in one ſum, and the product will be 50 pence, ſeconds, or 4 ſhillings, 2 pence, 2:25 of o penny for the price to ſell 1 pound to ga 12 pound in the hundred for 6 months time

5 *Exampl*

5. Example.

d.	1.2
48	0 0
	6
2	8 8
50	8 8

Makes 50 pence, 9:10 of a penny almost.

6 Example.

If 112 pound weight of Cloves coſt 33 pound, 12 ſhillings, how may I ſell them to gain 14 pound in the hundred, and give 4 months time? Firſt, ſet downe 33 pound, 12 primes; then adde 2 Cyphers, and multiply by 14, makes 4 pound, 704 thirds, of which take the third part, becauſe 4 months is the third part of one yeare, which is 1 pound 568 thirds: which added into one totall, makes 35 pound, 3 ſhillings, 4 pence, halfe penny for the price to ſell 112 pound to give 4 months time, and to gaine 14 pound in the 100 in 12 months.

5 Example.

5 Example.

33	600
	14
1	344
3	36
0	704
1	568
35	168

6 Example.

If in 112 pound weight of Sugar, ſold for 7 pound, 12 ſhillings ready money, there were gained 11 pound in the hundred, what did one pound coſt at firſt penny? Firſt, divide 7 pound, 6000006 by 111 pound, which is the principall and intereſt given, and the Quotient is 6 pound, 84684 fifths, which 112 pound coſt ready mony. Secondly, divide that Quotient by 112 pound, makes 61132 ſixths, or 14 pence 3 farthings for the price that one pound coſt at firſt penny.

7 Example.

7 Example.

If 300 pieces of Lawn coſt 321 pound; 4 ſhillings, how may I ſell them to loſe 15 pound in the hundred? Firſt, take the rate what one coſt, by dividing 321 pound, 2 primes by 300, makes 1 pound, 0706666 ſevenths, or one pound one ſhilling 5 pence almoſt, for the price that one piece coſt. Secondly, take the intereſt of 1|0706666 ſeventh, at 15 pound in the hundred and ſubtract it, and then it makes 91000 ſixths, or 18 ſhillings, 2 pence, 2.5 of a penny, for the price to ſell one piece to loſe 15 pound in the hundred ready money. Thirdly, for the proof of this work, ſay; If one piece coſt 910067 ſixths; what will 300 pieces coſt at that rate? Multiply 910067 ſixths by 300 and cut off 6 figures to the right hand makes 273 pound, 5 pence almoſt, for the ſum received for 300 pieces to loſe 15 pound in the 100.

Example.

```
        22222   l. 1.2.3.4.5.6
  321|2000000 (1| 706666
  3333333300
```

```
107666600          1.2.3.4.5.6
       15          910067
-----------              300
   160599          ----------
-----------      273|020100
   910067
```

```
          |1.2.3
      321 |200
          |  15
-----------------
       48 |18
-----------------
      273 |02   The Proof.
```

8 *Example.*

If in one ell of cloth sold for 3 shillings 2 pence, half-penny, there were gained 1[illegible] pound in the hundred ready money; wha[illegible] did that ell cost? Answer: set 3 shilling[illegible] 2 pence, half-penny, in Decimals, makes 3[illegible] pence, 5 primes; then divide 38 pence, 500[illegible] fourths by 100 pound, makes 35 pence, th[illegible] price that one ell cost.

Exampl[illegible]

Example.

```
 5
38|500 (35 d. the price one cost.
1100
11
```

9 *Example.*

If in one ell of cloth sold for 35 pence, 19 seconds, there were gained 7 pound in the hundred ready money, what did that ell cost, when there was 6 months time given? Divide 35 pound, 1900 fourths, by half the interest, adding 100, which is 103 pence, 5 primes, and the quotient is 34 pence, the price that the ell cost.

```
 474        d.
35|1900    (34
 10355
  103
```

10 *Example.*

A Merchant lent money at 10 pound in the hundred for 100 pound profit for 12 months, and at the end of 6 months he received principal and interest 356 pound, the question is, what was the sum lent? Divide 356 pound by 105 pound, which is the half

years interest and principall, and the quotient is 305 pound, 5:205 of a pound, for the sum lent.

Example.

9	
4155	*l.*
35600	(339 5:105 of a *li.*
10555	
100	
1	

11 *Example.*

If 17 pound lose 12 shillings, what will 100 pound lose? Divide 60000 fifths by 17, makes 3 pound, 529 thirds, or 3 pound 10s, 7 pence in the 100 pound.

12 *Example.*

If 37 yards of Velvet cost 32 pound, how must one yard be sold to gain 9 pound, 10 shillings in the hundred? First, 32 pound the price at 9 pound, 5 primes the hundred, makes 35 pound, 4 seconds; which divide by 37, makes the price of one yard to be 9 702 fifths, or 18 shillings, 11 pence, half-penny, to sell one yard to gain 9 pound, 10 shillings in the hundred.

Example.

Example.

l.	1.2.3		
32	000		
	95	*x*	
		2761	1.2.3.4
	160	350400	(9470
2	88	3777	
		33	
35	040		

or 18 *s.* 11.*d.ob.*

5. *Exchange in Decimals.*

1 *Example.*

IF one pound ſterling be 1 pound 14 ſhillings, 6 pence Flemiſh, what is 783 pound ſterling in Flemiſh money? Set out 1 pound, 14 ſhillings, 6 pence in Decimals, makes one pound, 725 thirds; which multiply by 783 pound, makes 1350 pound, 675 thirds, or 1350 pound 13 ſhillings, 6 pence.

Example.

l.	1.2.3			1.2.3
1	7 2 5			2 7 5
	7 8 3			7 8 3
5	1 7 5			8 2 5
138	0 0		22	0 0
1207	5		192	5
1350	677.		215	3 2 5

l.	1.2.3	
2 1 5	3 2 5	
1 3 5 0	6 7 5	
1 5 6 6	0 0 0	*The proof.*

2 *Example.*

If one pound exchange be 5 shillings, 6 pence, what is 783 pound? Set 5 *s.* 6 *d.* in Decimals, makes 275 thirds; which multiply by 783, makes 215 pound, 325 thirds, or 215 pound, 6 shillings 6 pence; which added to the last example, is 1566 pound, and so much is the double of the sum given, *viz.* of 783 pound, because the 2 prices given makes just 2 pound, and this by working a second question in exchange, the first is proved to be truly wrought, as appeareth in the Example above.

3 *Example.*

3 *Example.*

If one pound exchange be one pound, 17 ſhillings, 7 *d.ob.* what is a thouſand pound at that rate? Set 1 *l.* 17 *s.*7 *d.ob.* in Decimals, makes 1 pound, 88125 fifths; then becauſe 1000 hath 3 Cyphers, adde 3 Cyphers, and cut off five figures, and the anſwer is 1881 *li.* 5 ſhillings.

l..2
1881|25000

4 *Example.*

A Merchant doth receive 134 pound, 6 ſhillings for the exchange of one hundred pound ſterling from *Middleborough*, what was one pound ſterling in Flemiſh money? Place 134 pound, 6 ſhillings in Decimals, is 134 pound, 3 primes; then becauſe 100 pound hath 2 Cyphers, cut off two figures more to the left hand, and it will be 1 *li.* 343 thirds; or in Coyn, one pound, 6 ſhillings, 11 pence farthing, for the exchange of one pound at that rate.

l. 1.2.3.	*li.*	*s.*	*d.*	*q.*
1|348	or 1	6	11	1

5 *Example.*

A Merchant doth receive 645 pound, 12 ſhillings for exchange money, at 1 pound, 7 ſhillings, 6 pence for one pound ſterling, the queſtion is, how much ſterling money he did deliver? Divide 645 pound, 6 primes, by 1 pound; 375 thirds, or 1 pound, 7 ſhillings, 6 pence, makes 469| 5268 fourths, or 469 *li.* 10 ſhillings, 6 pence, 1 farthing for the ſterling mony delivered.

6 *Example.*

If 1 pound ſterling be 1 pound, 7 ſhillings 6 *d.* Flemiſh, what is 100 *l.* Flemiſh in ſterling Coin? Divide 100 pound by 1 pound, 375 thirds, makes 72 pound, 72727 fifths; or 72 pound, 14 ſhillings, 6 pence half-penny, that 100 *l.* makes.

7 *Example.*

If the exchange be from *Rome* to *London* at 69 pence ſterling one Duckat, how many Duckats ſhall be delivered at *Rome* for to receive 356 pound, 16 ſhillings ſterling at *London*? Anſwer. Divide 356 pound, 8 primes by 2875 fourths, which is 69 pence, and the Quotient will bee 1241 Duckats, 3 pence.

```
      3 1
    1 1 8 0 2
    6 9 3 0 0 5
  3 5 0 | 8 0 0 0   (1241 Duckats, and
  2 8 7 5 5 5 5     there remains 3 d.
    2 8 7 7 7
      2 8 8
        2
```

8 *Example.*

If the exchange be from *London* unto *Antwerp*, at 23 shillings, 5 pence, 3 farthings Flemish the pound sterling, how much mony must be delivered at *London*, to receive 146 *l.* 14 *s.* 10 *d.* 3 *q.* in Flemish mony? Answer: Divide 146 pound, 744775 sixths, by 1 *li.* 3 *s.* 5 *d.* 3 *q.* which is 1 pound, 1739582 sevenths, and the quotient is 125 pound; and so much must he deliver at *London*, to receive 146 pound, 14 shillings, 10 pence, 3 farthings in Flemish coin, at that rate.

Example.

```
    5 8 6 9 7 9
  2 9 3 4 8 9 5 1        l.
  1 4 6 | 7 4 7 7 5 0   (125
  1 1 7 3 9 5 8 2 2 2
    1 1 7 3 9 5 8 8
      1 1 7 3 9 5
```

9 Example.

A Merchant doth deliver at *Antwerp* 200 pound Flemish by exchange for *London* at 22 shillings 10 pence Flemish for 1 pound sterling; how much must he receive at *London*? Answer: Divide 200 pound by 1 pound, 1,1666 sixths, which is 22 shillings, 10 pence, makes 175 pound.

A generall Rule for exchange in Decimals.

If the price of a unite be given, then alwayes divide the sum of money whereon the question dependeth by that unite in Decimals, and the quotient is the answer to the question.

1 Example.

A Merchant doth deliver 100 pound sterling by exchange for *Rome*, at 72 pence sterling for 1 Duckat *De Camera*; the question is, how many Duckats he must receive at *Rome* for his 100 pound sterling? Here the price of 1 Duckat is given to be 72 pence, which is 6 shillings, or 3 primes; wherefore I divide 100 pound by 3 primes, and the quotient is 333 pound, 1:3 of a pound or 6 shillings, 8 pence, for answer to the question.

2 Example.

2 *Example.*

A Merchant doth deliver 756 pound sterling at *London* to receive Duckats at 66 pence sterling, the price of one Duckat; the question is, how many Duckats he must receive at *Venice*? Divide 756 pound by 66 pence, which is 275 thirds, and the quotient is 2748 Duckats, and 300:2750 of 1 Duckat for the Answer.

3 *Example.*

A Merchant at *Venice* doth deliver 1000 Duckats, to receive at *London* 287 pound, 10 shillings sterling, what is one Duckat? Set down 287 pound, 5 primes, and divide by 1000 Duckats, makes at 5 shillings, 9 pence for one Duckat.

```
                    1.2.3.4
287 5000 (2875
100 0000
 11 1
```

Makes 5 *s.* 9 *d.* one Duckat.

4 *Example.*

4 *Example.*

A Merchant at *Venice* doth deliver 800 Duckats by exchange for *London*, at 64 pence ob. the Duckat sterling mony, the question is how much sterling hee must receive at *London*? Set out 64 pence half-penny in Decimals, makes 26875 fifths; which multiply by 800, and cut off five figures, because your fractions are 5, and the Product will be 215 pound sterling.

1.2.3.4.5
26875
800

215|00000

Makes 215 pound sterling.

5 *Example.*

A Merchant doth deliver 1000 duckats by exchange for *London*, at 71 pence sterling for one duckat, how much must he receive sterling mony at *London*? Set out 71 pence in Decimals, makes 2958 fourths, 1:3, and add 3 cypher

3 cyphers for 1000, and cut off 4 figures, makes 295 pound, 8 primes, 1:3, or 295 pound 16 shillings 8 pence, for the Answer.

l.	
295	8000 makes 295 *l.* 8 primes, 1:3.

6 Example.

One penny Flemish is 3:5 of one penny sterling, and 1 pound Flemish is 3:5 of 1 pound sterling, or 12 shillings, wherefore to convert Flemish money into sterling Coin, multiply your Flemish money by 3:5, which in Decimals is 6:10, or 6, and the Product will be the value of your Flemish money in sterling Coin. In 345 Flemish, how much sterling Coyn? Multiply 345 by 6 primes, and the Product is 207 pound sterling.

l	
In 345	6
207	0

l.	
In 7856	6
	62
4714	08

7 *Exam-*

7 *Example.*

In 756 pound, 18 ſhillings ſterling, how much Flemiſh coin, when 1 penny Flemiſh is 3:5 of a penny Engliſh? Divide 756 pound 9 primes, by 6 primes, makes 1261 pound; 5 primes, or 10 ſhillings.

~~1~~ ~~3~~ ~~0~~ ~~3~~	*li.*	|
~~7~~ ~~5~~ ~~6~~ | ~~9~~ ~~0~~	(1261	5
~~6~~ ~~6~~ ~~6~~ ~~6~~		

Reduction of meaſures from one place to another.

IF you will reduce the meaſure of one Countrey into the meaſures of another; as if you would reduce the meaſures of *Antwerp*, *Gaunt*, *Brudges*, *Sivill*, *Roven* or of any other Countrey into the meaſures at *London*; learn firſt the order of meaſuring of all ſorts of commodities in both places, either out of the experience of Merchants & Tradeſmen in thſe places, or out of the beſt and lateſt approved Authors that have written Tables to that effect, and note that 4 ells at *London*, makes 5 yards, and 100 ells at *London* is at

Antwerp;

	Ells.
Antwerpe	166.2:3
Gaunt short measure	164
Gaunt long measure	154
Brudges	164
Arras	165
Calice	157
Lisse	166
Mastrich	173
Cullen	208
Franck fort	208
Noremberg	174
Dantringe	139
Roven	103
Paris	95
Lions	100

Genua	480.2:3 Palmes
Millain	214 Braces
Florence	188 Braces.
Venice for Silk hath	196 Ells.
Venice for Linnen hath	180 Ells.
Rome	56 Cana.
Lisborne	100 Varras.
Madera	104 Varras.
Sivill	135 Varras.

These I have taken out of Mastersons *Arithmetick.*

The

The difference of 1 hundred ells, Palmes, Varras, or Braces, being found of any place from *London*; if you would convert the measures of any of those places to *London* measure: as for example, if you would convert 356 ells of *Brudges* measure into ells, at *London*, you shall find in the Table, that 164 ells makes 100 at *London*; then by the Rule of Three say,

1 *Example.*

If 164 be 100, what are 356 ells? Multiply 356 by 100; and divide 164 by makes 217 ells, 12:164 of an ell, which 356 at *Brudges* will make in *London*. But according to the order of Decimalls, if you will bring the measures of other places to those of *London*, set your number of one hundred found in the Table, to a unite in Decimals; as in the last example 164 stands thus 1|64 seconds; then you need but divide your number 356 by 1 ell, 64 second, and the Quotient is 217 ells, 12:164 ells, as in the last example.

Again, if you would redute *London* measure to the measures of any other place; find the numner of 100 to that place, and set it in

Deci-

Decimals, and multiply your number of ells at *London* by those numbers found, and the Product will be your desire.

2 *Example.*

In 758 ells at *London* how many ells at *Dantzing*? I find in the Table 139, ells there, make 100 at *London*; so I set 139 to a unite, and it is 1 ell 39 seconds; by which I multiply 758, makes 1053 ells, 62:100 part.

1 *Example.*

```
111
2862 Ells
5600|217
1444
169
1
```

2 *Example.*

```
                 758|00
                   1|39
                ---------
12:164            68|22
                 227|4
                 758|
                ---------
                1053|62
```

3 *Example.*

3 *Example.*

If 166 ells 2:3 at *Antwerp* be 100 ells at *London*, how many ells at *London* are 1756 ells at *Antwerp*? Set 166, 2:3 to a unite, makes 1 ell, 66 seconds, and 2:3 of a second: Or otherwise, 1 ell, and 2:3 of 1 ell; by which divide 1756, makes 1053 1:2.

```
   5070
  894702          Elle.
1756000000      ]1053 1:2 almost
16666666
 166666
  1666
   16
```

4 *Example.*

In 3258 ells at *London*, how many Braces at *Millain*? Find 214 for 100 at *London*, so that if you set 214 to a unite, it will be 2 Braces, 14 seconds; by which multiply 3258, makes 6982 Braces, and 12:100 part of a Brace.

And in this manner you may easily convert your Measures or Waights from one place to another either by Multiplication or division, without

without the Golden Rule: But of this, if it pleaſe God to lend me life and health, I doe purpoſe to ſpeak in a Treatiſe at large of Decimall Arithmetick, for the good of my Country-men and others, if I find theſe my labors and indeavours to be acceptable and beneficiall to others; and will better inform my ſelf by Merchants, who have had experience in the Reduction of Waights and Meaſures from place to place: In the mean time, here is a foundation laid to work upon, let the difference be what it will: And ſo for this time I will end this Treatiſe of Decimall Arithmetick, and go in hand with ſome operations of Annuities, as followeth.

Of

Of Intereſt and Annuities.

How to frame Tables to work Intereſt and Annuities, or Purchaſes at any rate.

FOr as much as theſe kind of operations of Intereſt and Annuities, are very tedious and troubleſome, if they be to be wrought for many years, although I have already in the former Book ſet forth many ſeverall manners of working thoſe kind of queſtions, after a more eaſie kind of method, then heretofore hath been publiſhed by any other in the like kind whatſoever, yet here I have thought good alſo in this place, to ſhew the wayes, whereby any man that is deſirous to be ſatisfied in the reaſons or grounds of thoſe kind of works, may be able to calculate for his own uſe a Table or Tables, whereby to abbreviate thoſe kind of operations, by Multiplication, or Diviſion only, without the help of the Golden Rule, or any tedious Reductions of Multiplications and Diviſions, for many years to come, at one only operation; as ſhall appear by the examples following.

How to calculate the Table or Breviate of 10 pound in the hundred Compound Interest.

If you will calculate a Table for 10 pound in the hundred compound Interest for 21 or 30 years; Place your numbers as in the examples following, beginning with a unite, or 1, adding 7 cyphers unto it, and then take the tenth part of that, which is the same numbers one room more to the right hand, and adde them into the first numbers, and the totall will be the sum for the first year; and so you must work for the second, third, fourth, &c, untill 21, or 30 years: But here you shall note, that you shall need to set down in your breviate more then 8, 9, or 10 numbers at the most, for because the rest will be superfluous; as for example.

Example

Example.

Inter.	1.2.3.4.5.6.7.8	Cats	Inter.	1.2.3.4.5.6.7.8.	Cats
1	00000000	0	2	35794769	9
	1			23579476	
1	10000000	1	2	59374246	10
	11			25937424	
1	21000000	2	2	85311670	11
	121			28531167	
1	33100000	3	3	13842837	12
	1331			31384283	
1	46410000	4	3	45227121	13
	14641			34522712	
1	61051000	5	3	79749833	14
	161051			37974983	
1	77156100	6	4	17724816	15
	1771561			41772481	
1	94871710	7	4	59497298	16
	19487171			45949729	
2	14358881	8	5	05447028	17
	21435888			50544702	
2	35794769	9	5	55991731	18
				55599173	
			6	11590904	19

Ha

Here you may see in this Table the manner of gathering the Breviate of 10 pound in the hundred, Compound Interest, which you may extend to what number of years you please, only adding a unite in the eight place, as you see the figures in the ninth place doe arise; and now I will here set down the Breviate from one year unto 40, ready gathered.

The

The Breviat of 10 *pound in the hundred per annum, Compound Interest for* 40 *years.*

years	1.	2.	3.	4.	5.	6.	7.	8.	years	1.	2.	3.	4.	5.	6.	7.	8.	9.
1	1	1	0	0	0	0	0	0	21	7	4	0	0	2	4	9	9	0
2	1	2	1	0	0	0	0	0	22	8	1	4	0	2	7	4	9	0
3	1	3	3	1	0	0	0	0	23	8	9	5	4	3	0	2	4	0
4	1	4	6	4	1	0	0	0	24	9	8	4	9	7	3	2	6	0
5	1	6	1	0	5	1	0	0	25	1	0	8	3	4	7	0	5	9
6	1	7	7	1	5	6	1	0	26	1	1	9	1	8	1	7	6	5
7	1	9	4	8	7	1	7	1	27	1	3	1	0	9	9	4	1	
8	2	1	4	3	5	8	8	8	28	1	4	4	2	0	9	9	3	6
9	2	3	5	7	9	4	7	6	29	1	5	8	6	3	0	9	2	9
10	2	5	9	3	7	4	2	4	30	1	7	4	4	9	4	0	2	2
11	2	8	5	3	1	1	6	7	31	1	9	1	9	4	3	4	2	4
12	3	1	3	8	4	2	8	3	32	2	1	1	1	3	7	7	6	6
13	3	4	5	2	2	7	1	2	33	2	3	2	2	5	1	5	4	3
14	3	7	9	7	4	9	8	3	34	2	5	5	4	7	6	6	9	7
15	4	1	7	7	2	4	8	1	35	2	8	1	0	2	4	3	6	7
16	4	5	9	4	9	7	2	9	36	3	0	9	1	2	6	8	0	3
17	5	0	5	4	4	7	0	2	37	3	4	0	0	3	9	4	8	4
18	5	5	5	9	9	1	7	3	38	3	7	4	0	4	3	4	3	2
19	6	1	1	5	9	0	9	0	39	4	1	1	4	4	7	7	7	5
20	6	7	2	7	4	9	9	9	40	4	5	2	5	9	2	5	5	3

How to calculate a Table or Breviate at any rate under or above 10 pound in the hundred Compound Interest.

If you would calculate a Table or Breviate at any rate under or above 10 pound in the hundred compound interest, place a unite with 7 Cyphers to it; then if you will calculate for 12 pound in the hundred, or 16 pound; set your 12 or 16 under the 2 first Cyphers, next the unite, and multiply your unite, omitting the cyphers by your interest, and adde the Product into one Totall, and the summe is the principall and interest for the first year, and so work again for the second, third, &c. to finish your Table, as aforesaid, at 10 pound in the hundred. But if your interest be under 10 pound in the hundred, place your number of the interest under the second Cypher from your unite, and work as is in the example following.

Example.

Inter.	1.2.3.4.5.6.7.8	Years	Inter.	1.2.3.4.5.6.7.8	Years
1	0000000080		1	3604889688	4
1	0800000008	1		10883904	
	864		1	46932800 8	5
1	16640000 8	2		11754624	
	93312		1	58687438	6
1	25971200 8	3	1	71382422	7
	10077696				
1	3604889 6	4			

In this manner you may proceed infinitely. And thus much shall suffice for making of these Breviats.

The

The Breviat of 8 pound in the hundred per annum, Compound Interest for 30 years.

years	1.2.3.4.5.6.7.8	years	1.2.3.4.5.6.7.8
1	1 08 00 00 00	16	3 42 59 42 56
2	1 16 64 00 00	17	3 70 00 18 00
3	1 25 97 12 00	18	3 99 61 19 44
4	1 36 04 88 96	19	4 31 57 01 00
5	1 46 93 28 00	20	4 66 09 57 12
6	1 58 68 74 32	21	5 03 38 33 70
7	1 71 38 24 20	22	5 43 65 40 46
8	1 85 09 30 20	23	5 87 14 63 66
9	1 99 90 04 64	24	6 34 11 80 76
10	2 15 89 24 96	25	6 84 84 75 12
11	2 33 16 38 92	26	7 39 63 53 22
12	2 51 81 70 16	27	7 98 80 61 44
13	2 71 96 23 72	28	8 62 71 06 32
14	2 93 71 92 36	29	9 31 72 74 88
15	3 17 21 69 16	30	10 06 26 50 60

The use of these Breviates and Tables, and of all others of like nature in working of questions of Interest and Annuities.

1 *Rule.*

To finde what will be the amount of one pound forborne for any number of years by compound interest after any rate *per cent.* so that you have a Breviate for the rate proposed. Enter the Breviate for the rate proposed, and finde in the left Margine, &c. the number of years, and from that number so found, cut off 7 Figures, the answer is in pounds, primes, seconds, thirds, fourths, &c. for the answer to the question demanded.

1 *Example.*

What is one pound put forth at Interest compound, at 10 pound in the hundred worth, to be paid at the end of 18 yeares? Find the eighteenth number in the Breviate, which is 5|5599173; from which cut off seven figures to the right hand, and the answer is 5 pound, 11 shillings, 2 pence, *q.*

Example.

l. 1.2.3.4.5.6.7
5|5599173 Makes 5*l.* 11*s.* 2*d.* *q.*

2 *Exampl*

2 Example.

What is 100 pound due at 7 yeares end worth to be paid at the end of the terme, at 10 in the hundred compound interest; Find the seventh number in the Table of 10 pound in the hundred, makes 19487171; to the which adde 2 cyphers, because 100*l.* hath 2 Cyphers, and cut off 7 figures to the right hand, and the summe is 194 pound, 87171 fifths for the answer.

l. 1.2.3.4.5
194|87171 00, Or 194*l.* 17*s.* 5*d.* almost.

3 Example.

What will 758 pound for 6*l* yeares make at 10 pound in the 100 compound Interest, to be paid at the end of the Term? Find the sixth number in the Table of 10 pound in the 100, which is 17715610; which multiply by 758, the money named in the question, and the Product, cutting off 7 figures to the right hand, makes 1342 pound, 16 shillings, 10 pence, *ob.* almost.

1.2.3.4.5.6.7
1 7 7 1 5 6 1 0
7 5 8

1 4 1 7 2 4 8 8 0
8 8 5 7 8 0 5 0
1 2 4 0 0 9 2 7 0

1 3 4 2 8 4 3 2 3 8 0

2 Rule.

How to find what any yearly annuity will make to be paid all at the end of the term: First find the number of years of the annuity given, and from the number answering, deduct a unite in the first place to the left hand, and adde a cypher to the last figure to the right hand, and cut off 7 figures to the right hand, and the answer is found.

1 Example.

What will 1 pound annuity make, to be paid for at the end of the term of 16 years at 10 pound in the hundred compound interest? Finde the sixteenth number in the Table of 10 pound in the 100, and subtract a unite

unite from the first figure to the left hand, adding a cypher to the right hand, makes 359497290; from the which cut off 7 figures to the right hand, makes 35 pound, 18 shillings, 11 pence 3 farthings.

l. 1.2.3.4.5.6
35|94 97290

2 Example.

What will 1000 pound annuity yearly amount unto, to be all forborne untill the end of the term of 5 years at 10 pound in the hundred compound interest? Finde the fifth number in the Table of 10 pound in the hundred, and substract a unite from the first figure, adding a cypher in the last place, makes 61051000; then because 1000 pound hath 3 cyphers, adde 3 cyphers, and cut off 7 figures, makes 6105 pound 2 shillings for the answer.

l. 1.2.3.4.5.6.7
6105|10000000

3 Example.

What will 142 pound annuity make, to be paid at the end of the terme of 10 years?

S 4. Finde

Find the tenth number in the Breviate of 10 pound in the hundred, and substract a unite in the first place, adding a cypher to the last, makes 159374240; which multiply by 142 pound, the annuity named, and from the Product cut off 7 figures to the right hand, the answer to the question is 2263 pound, 2 shillings, 2 pence 3 farthings.

```
     l. 1.2.3.4.5.6.7
     159374240
            142
     ---------
     318748480
    637496960
   159374240
   ---------------
   2263|1142080
```

3 *Rule.*

How to finde what any sum of money due at the end of any number of years is worth in ready mony, at 10 pound in the hundred compound interest. Enter the Table of 10 pound in the hundred with your number of years, and the number which doth answer in the Table is your Divisor; then adde 7 Cyphers to your summe of money given, to make your Dividend; then divide your Dividend by your Divisor, and the Quotient, adding

adding more cyphers, will be your answer in pounds, primes, seconds, thirds, &c.

1 *Example.*

What is 1000 pound due at 7 yeares end worth in ready mony, at 10 pound in the 100 compound Interest? Find the seventh number in the Table of 10*l.* in the 100, which is 19487171, this is your Divisor. Then adde 7 Cyphers to 1000*l.* makes 10000000000; or adde more Cyphers, marking out your prime line in your dividend, to find out how many figures your Quotient will have in whole numbers: and the rest will be primes, seconds, and thirds; this is your dividend, and then divide by your divisor, makes 513 pound, 3 shillings 2 pence.

```
        1582
       113250
       3081252
       15427793
     26641459795          l. 1.2:3
   10000000000|000 (513|1.5.8:
   19487171112111
    19487177777
     164871111
      19487111
       19487
```

Having found what 1000 pound due at 7 yeares end is worth in ready money; if you will finde what 100 pound, or 10 pound, or 1 pound is worth in ready mony; place your Quotient in Decimals, and marke out your prime lines, cutting off one figure for 100 pound, 2 for 10 pound, or 3 for 1 pound, the answer is as followeth.

Example.

For 100*l.*	For 10*l.*	For 1*l.*
l. 1.2.3.4	*l.* 1.2.3.4.5	1.2.3.4.5.6
5 1 | 3 1 5 8	5 | 1 3 1 5 8	5 1 3 1 5 8
51 *l.* 6 *s.* 3 *d* 3 *q.*	5 | *l.* 2 *s.* 7 *d.* 29.	1 | 0 *s.* 3 *d.* 19.

2. *Example.*

What is 750 pound due at 5 years end worth in ready money, at 10 pound in the hundred compound interest? Finde the fifth number in the Table of 10 *li.* in the hundred, which is 16105100 for Divisor; then place 10 cyphers before your number given 750 pound, and mark out your prime line, and divide by your Divisor, and the quotient will be 465 pound 13 shillings, 10 pence for the answer to the question given.

Example.

Example.

```
        1
      146
     111259
    9165848
   1057964541          l. 1.2.3
   750 0000 1300       (465|6.9.1
   16105111111
    161055555
     1160511
      16105
       161
        1
```

Makes 465 pound 13 shillings 10 pence.

3 *Example.*

What is 847 pound due at 21 yeares end worth in ready mony, at 10 pound in the hundred compound interest? Finde the 21 number in the Table of 10 pound in the hundred for Divisor, which is 74002490; then set 10 Cyphers to your numbers given, makes 8470000000000 for your Dividend; then divide, and the quotient will be 144*l.* 9*s.* 1*d.* 1:5 of 1*d.* the answer.

Example.

Example.

4139
411418
33715119
3297282144
106975011448 l. 1.2.3
8470000000000 (114|45.5
740024999999
74002499999
740024444
7400222
74000
740

Makes 114*l.* 9*s.* 1*d.* 1:5 of a penny.

4 *Rule.*

How to find what any yearly Annuities for any number of years is worth in ready mony at 10 pound in the hundred compound interest. Enter the Table of 10*li. per cent.* with your number of years given, and from the numbers found, substract a unite in the first place, and place a cypher in the last for your Dividend; which divide by the number found in the Table against your yeare given, and the quotient is the answer to the question.

1 *Example.*

1 *Example.*

What is 100 pound *per annum* annuity for 21 years worth in ready mony at 10 pound in the hundred compound interest? Look in the Table of 10 pound in the hundred for 21 years, and substract a unite in the first place, and adde a cypher in the last, makes 640024990: Divide this by 74002499, the 21 number, adding cyphers, and marking the prime line, and the quotient is 864 pound 17 shillings 4 pence 2 farthings for the answer to the question demanded.

Example.

```
      562
      416 177
    36031 77 113
   480 04998648 69          li. 1.2.3
  640024099000|000          (864|869
   740 0249999999
    740 02499999
     740 024444
      7400222
       74002
        740
```

2 *Example.*

Having found what 100 pound annuity will amount unto, if you would know what 10 pound

Example.

4139
411418
33715119
3297282144
106975011448 l. 1.2.3
8470000000000 (114|45.5
740024999999
74002499999
740024444
7400222
74000
740

Makes 114*l.* 9*s.* 1*d.* 1:5 of a penny.

4 *Rule.*

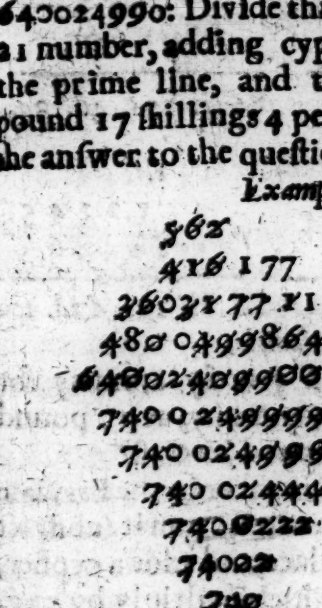
How to find what any yearly Annuities for any number of years is worth in ready mony at 10 pound in the hundred compound interest. Enter the Table of 10*li. per cent.* with your number of years given, and from the numbers found, substract a unite in the first place, and place a cypher in the last for your Dividend; which divide by the number found in the Table against your yeare given, and the quotient is the answer to the question.

1 *Example.*

1 *Example.*

What is 100 pound *per annum* annuity for 21 years worth in ready mony at 10 pound in the hundred compound interest? Look in the Table of 10 pound in the hundred for 21 years, and subtract a unite in the first place, and adde a cypher in the last, makes 64002499. Divide this by 74002499, the 21 number, adding cyphers, and marking the prime line, and the quotient is 864 pound 17 shillings 4 pence 2 farthings for the answer to the question demanded.

Example.



2 *Example.*

Having found what 100 pound annuity will amount unto, if you would know what 10 pound

10 pound, or 1 pound annuity will amount unto, or 1000 pound in 21 ysares; place it in Decimals, and cut off 1,2, or adde 3 cyphers to the laſt, or remove 3 places and you ſhall find your demand.

Example.

1000*li.*	100*li.*
1.2.3	1.2.3
8648|690	864|869
8648*l.* 13*s.* 9*d.* 3:5	864*l.* 17*s.* 4*d.* 3:3

10*li.*	1*li.*
1.2.3.4	1.2.3.4.5
86|4869	864869
86*l.* 9*s.* 8*d.* 3:4	8*l.* 12*s.* 11*d.* 1:2:

3 Example.

What is 546 pound yearely annuity for 14 years worth in ready mony, at 10 pound in the hundred compound intereſt?

Find the fourteenth number in the Breviate of 10 pound in the hundred; from it ſubſtract an Unite in the firſt place, and adde a cypher, makes 27974830; which multiply by 546, makes 15274340718 0; which divide by 37974983, the 14 number in the Breviate, makes 4012 pound, 4 ſhillings, 2 pence, 3 farthings.

40

40
4208
8010897
0883475 52447 *li.* 1.23.4
152743407180|000(4022|2 1 1
37974983333333
379749888888
3797499999
37974444
379777
3799
37
Makes 4022*l.* 4*s.* 2*d.* 3:4

If a summe of mony due at the end of any number of yeares specified, be bought after any rate *per cent.* compound interest for a price knowne: to find what that sum due at the end of that terme is.

1 *Example.*

There is a Debt bought for 513 pound, 3 shillings, 2 pence ready mony, which was due at 7 yeares end, now the Question is, what the debt was at 10 pound in the hundred compound interest? Set your mony paid in Decimals, makes 513|158; which multiply by 19487171, the number against 7 years, cutting off 10 figures, makes 999 pound, 999 thirds, wanting but one third of

1000

1000 pound; wherefore I conclude, the debt was 1000 pound, which was due at 7 years end.

2. Example.

There was a debt bought for 600 pound, which was due at 4 years end, what was that debt at 10 pound in the hundred compound intereſt? Multiply 600 pound by the numbers againſt 4 years, which are 14641000 makes 878 pound, 4600000 ſevenths, or in coine 878 pound 9 ſhillings 2 pence, 2:5 of one penny for the ſum of that debt.

14641000
600
878|4600000

Makes 878 *l.* 9*s.* 2*d.* 2:5 of a penny.

Thus much is thought ſufficient for Decimall Arithmetick; In the next place followeth certaine Tables exactly calculated for intereſt at 10, 8, 7, 6, *per cent. per annum.* with directions for the uſe and underſtanding of them, as alſo other Tables very delightfull and neceſſary.

The

The first table of Simple Interest at 10 per cent.

	1 Moneth.		2 Moneth.		3 Moneth.		4 Moneth.	
li.	li.	s. d.	li.	s. d.	li.	s. d.	li.	s. d.
10000	83:	16:8	166:	13:4	250:	0:0	333:	6:8
9000	75:	0:0	150:	0:0	225:	0:0	300:	0:0
8000	66:	13:4	133:	6:8	200:	0:0	266:	13:4
7000	58:	6:8	116:	13:4	175:	0:0	233:	6:8
6000	50:	0:0	100:	0:0	150:	0:0	200:	0:0
5000	41:	13:4	83:	6:8	125:	0:0	166:	13:4
4000	33:	6:8	66:	13:4	100:	0:0	133:	6:8
3000	25:	0:0	50:	0:0	75:	0:0	100:	0:0
2000	16:	13:4	33:	6:8	50:	0:0	66:	13:4
1000	8:	6:8	16:	13:4	25:	0:0	33:	6:8
900	7:	10:0	15:	0:0	22:	10:0	30:	0:0
800	6:	13:4	13:	6:8	20:	0:0	26:	13:4
700	5:	16:8	11:	13:4	17:	10:0	23:	6:8
600	5:	0:0	10:	0:0	15:	0:0	20:	0:0
500	4:	3:4	8:	6:8	12:	10:0	16:	13:4
400	3:	6:8	6:	13:4	10:	0:0	13:	6:8
300	2:	10:0	5:	0:0	7:	10:0	10:	0:0
200	1:	13:4	3:	6:8	5:	0:0	6:	13:4
100	0:	16:8	1:	13:4	2:	10:0	3:	6:8
55	0:	9:2	0:	18:4	1:	7:6	1:	6:8
25	0:	4:2	0:	8:4	0:	12:6	0:	16:8

The first Table of Simple Interest at 10 per cent.

l.	1 Moneth. l. s. d.	2 Moneth. l. s. d.	3 Moneth. l. s. d.	4 Moneth. l. s. d.
90	0 15 0	1 10 0	2 5 0	3 0 0
80	0 13 4	1 6 8	2 0 0	2 13 4
70	0 11 8	1 3 4	1 15 0	2 6 8
60	0 10 0	1 0 0	1 10 0	2 0 0
50	0 8 4	0 16 8	1 5 0	1 13 4
40	0 6 8	0 13 4	1 0 0	1 6 8
30	0 5 0	0 10 0	0 15 0	1 0 0
20	0 3 4	0 6 8	0 10 0	0 13 4
10	0 1 8	0 3 4	0 5 0	0 6 8
9	0 1 6	0 3 0	0 4 6	0 6 0
8	0 1 4	0 2 8	0 4 0	0 5 4
7	0 1 2	0 2 4	0 3 6	0 4 8
6	0 1 0	0 2 0	0 3 0	0 4 0
5	0 0 10	0 1 8	0 2 6	0 3 4
4	0 0 8	0 1 4	0 2 0	0 2 8
3	0 0 6	0 1 0	0 1 6	0 2 0
2	0 0 4	0 0 8	0 1 0	0 1 4
1	0 0 2	0 0 4	0 0 6	0 0 8
10s.	0 0 1	0 0 2	0 0 3	0 0 4
5s.	0 0 0	0 0 1	0 0 1	0 0 2
2:6	0 0 0	0 0 0	0 0 0	0 0 1

The second Table of Simple Interest at 8 per cent.

	1 Moneth.	2 Moneth.	3 Moneth.	4 Moneth.
li.	li. s. d.	li. s. d.	li. s. d.	li. s. d.
10000	66.13.4	133.6.8	200.0.0	266.13.4
9000	60.0.0	120.0.0	180.0.0	240.0.0
8000	53.6.8	106.13.4	160.0.0	213.6.8
7000	46.13.4	093.6.8	140.0.0	186.13.4
6000	40.0.0	80.0.0	120.0.0	160.0.0
5000	33.6.8	66.13.4	100.0.0	133.6.8
4000	26.13.4	53.6.8	80.0.0	106.13.4
3000	20.0.0	40.0.0	60.0.0	80.0.0
2000	13.6.8	26.13.4	40.0.0	53.6.8
1000	6.13.4	13.6.8	20.0.0	26.13.4

	5 Moneth.	6 Moneth.	7 Moneth.	8 Moneth.
li.	li. s. d.	li. s. d.	li. s. d.	li. s. d.
10000	333.6.8	400.0.0	466.13.4	533.6.8
9000	300.0.0	360.0.0	420.0.0	480.0.0
8000	266.13.4	320.0.0	373.6.8	426.13.4
7000	233.6.8	180.0.0	326.13.4	373.6.8
6000	200.0.0	240.0.0	280.0.0	320.0.0
5000	166.13.4	200.0.0	233.6.8	266.13.4
4000	133.6.8	160.0.0	186.13.4	213.6.8
3000	100.0.0	120.0.0	140.0.0	160.0.0
2000	066.13.4	080.0.0	093.6.8	106.13.4
1000	043.6.8	040.0.0	046.13.4	53.6.8

The second Table of Simple Interest at 8 per cent. for 1,2,3,4,5,6,7,8 Months.

l.	1 Moneth. l. s. d.	2 Moneth. l. s. d.	3 Moneth. l. s. d.	4 Moneth. l. s. d.
1000	6 13 4	13 6 8	20 0 0	26 13 4
900	6 0 0	12 0 0	18 0 0	24 0 0
800	5 6 8	10 13 4	16 0 0	21 6 8
700	4 13 4	9 6 8	14 0 0	18 13 4
600	4 0 0	8 0 0	12 0 0	16 0 0
500	3 6 8	6 13 4	10 0 0	13 6 8
400	2 13 4	5 6 8	8 0 0	10 13 4
300	2 0 0	4 0 0	6 0 0	8 0 0
200	1 6 8	2 13 4	4 0 0	5 6 8
100	0 13 4	1 6 8	2 0 0	2 13 4

l.	5 Moneth. l. s. d	6 Moneth. l. s. d.	7 Moneth. l. s. d.	8 Moneth. l. s. d
1000	33 6 8	40 0 0	46 13 4	53 6 8
900	30 0 0	36 0 0	42 0 0	48 0 0
800	26 13 4	32 0 0	37 6 8	42 13 4
700	23 6 8	28 0 0	32 13 4	37 6 8
600	20 0 0	24 0 0	28 0 0	32 0 0
500	16 13 4	20 0 0	23 6 8	26 13 4
400	13 6 8	16 0 0	18 13 4	21 6 8
300	10 0 0	12 0 0	14 0 0	16 0 0
200	6 13 4	8 0 0	9 6 8	10 13 4
100	3 6 8	4 0 0	4 13 4	5 6 8

A Table of Simple Interest at 8 per cent. for 1, 2, 3, 4, 5, 6, 7, 8, Moneths.

l.	1 Moneth l. s. d.	2 Moneth. l. s. d.	3 Moneth. l. s. d.	4 Moneth. l. s. d.
90	0 12 0	1 4 0	1 16 0	2 8 0
80	0 10 8	1 1 4	1 12 0	2 2 8
70	0 9 4	0 18 8	1 8 0	1 17 4
60	0 8 0	0 16 0	1 4 0	1 12 0
50	0 6 8	0 13 4	1 0 0	1 6 8
40	0 5 4	0 10 8	0 16 0	1 1 4
30	0 4 0	0 8 0	0 12 0	0 16 0
20	0 2 8	0 5 4	0 8 0	0 10 8
10	0 1 4	0 2 8	0 4 0	0 5 4

l.	5 Moneth. l. s. d.	6 Moneth. l. s. d.	7 Moneth. l. s. d.	8 Moneth. l. s. d.
90	3 0 0	3 12 0	4 4 0	4 16 0
80	2 13 4	3 4 0	3 14 8	4 5 4
70	2 6 8	2 16 0	3 5 4	3 13 8
60	2 0 0	2 8 0	2 16 0	3 4 0
50	1 13 4	2 0 0	2 6 8	2 13 4
40	1 6 8	1 12 0	1 17 4	2 2 8
30	1 0 0	1 4 0	1 8 0	1 12 0
20	0 13 4	0 16 0	0 18 8	1 1 4
10	0 6 8	0 8 0	0 9 4	0 10 8

A Table of Simple Interest at 8 per cent.

l.	1 Moneth s.	d.	q.	2 Moneth s.	d.	q.	3 Moneth s.	d.	q.	4 Moneth s.	d.	q.
9	1	2	1	2	4	3	3	7	0	4	9	2
8	1	0	3	2	1	2	3	2	1	4	3	0
7	0	11	0	1	10	1	2	9	2	3	8	3
6	0	9	2	1	7	0	2	4	3	3	2	1
5	0	8	0	1	4	0	2	0	0	2	8	0
4	0	6	1	1	0	3	1	3	0	2	1	2
3	0	4	3	0	9	2	1	7	1	1	7	0
2	0	3	0	0	6	1	0	9	2	1	0	3
1	0	1	2	0	3	0	0	4	3	0	6	1

l.	5 Moneth s.	d.	q.	6 Moneth s.	d.	q.	7 Moneth s.	d.	q.	8 Moneth s.	d.	q.
9	6	0	0	7	2	1	8	4	3	9	7	0
8	5	4	0	6	4	3	7	5	2	8	6	1
7	4	8	0	5	7	0	6	6	1	7	5	2
6	4	0	0	4	9	2	5	7	0	6	4	3
5	3	4	0	4	0	0	4	8	0	5	4	0
4	2	8	0	3	2	1	3	8	3	4	3	0
3	2	0	0	2	4	3	2	9	2	3	2	1
2	1	4	0	1	7	0	1	10	1	2	1	2
1	0	8	0	0	9	2	0	11	0	1	0	3

A Table of Simple Interest at 8 per cent. for 1.2.3.4.5.6. for under 20s.

	1 Mon.		2 Mon.		3 Mon.		4 Mon.		5 Mon.		6 Mon.	
s.	d.	q.	d.	q.	d.	q.	d.	q.	d.	q.	d.	q.
20	1	2	3	0	4	3	6	1	8	0	9	2
19	1	2	3	0	4	1	5	3	7	2	9	0
18	1	2	3	0	4	0	5	2	7	0	8	2
17	1	2	3	0	3	3	5	0	6	3	8	0
16	1	1	2	0	3	2	4	3	6	1	7	2
15	1	1	2	0	3	1	4	2	6	0	7	0
14	1	1	2	0	3	0	4	1	5	2	6	2
13	1	0	2	0	2	3	3	3	5	0	6	0
12	1	0	2	0	2	2	3	2	4	3	5	2
11	1	0	2	0	2	1	3	1	4	1	5	0
10	0	3	1	2	2	1	3	0	4	0	4	3
9	0	2	1	1	2	0	2	3	3	2	4	1
8	0	2	1	1	1	3	2	2	3	0	3	3
7	0	2	1	0	1	2	2	0	2	3	3	1
6	0	1	1	0	1	1	1	3	2	1	2	3
5	0	1	0	3	1	0	1	2	2	0	2	1
4	0	1	0	2	0	3	1	1	1	2	1	3
3	0	0	3	1	0	2	0	3	1	0	1	1
2	0	0	2	1	0	1	0	2	1	0	1	0
1	0	0	1	0	0	0	0	1	0	1	0	1

A Table of Simple Interest at 8 per cent. for 1.2.3.4.10. or 20 dayes.

	1 Day			2 Dayes			3 Dayes		
l.	l.	s.	d. q	l.	s.	d. q.	l.	s.	d. q.
1000	0	4	4 3	0	8	9 1	0	13	2 0
900	0	3	11 1	0	7	10 2	0	11	9 3
800	0	3	6 0	0	7	0 0	0	10	6 0
700	0	3	0 3	0	6	1 2	0	9	2 1
600	0	2	7 2	0	5	3 0	0	7	10 2
500	0	2	2 1	0	4	4 2	0	6	6 3
400	0	1	9 0	0	3	6 0	0	5	3 0
300	0	1	3 3	0	2	7 2	0	3	11 2
200	0	0	10 2	0	1	9 0	0	2	7 2
100	0	0	5 1	0	0	10 2	0	1	3 3

	4 Dayes			10 Dayes			20 Dayes		
l.	l.	s.	d. q.	l.	s.	d. q.	l.	s.	d. q.
1000	0	17	6 2	2	3	11 0	4	7	10 0
900	0	15	9 0	1	19	6 1	3	19	0 2
800	0	14	0 1	1	15	1 2	3	10	3 0
700	0	12	3 0	1	10	8 3	3	1	5 2
600	0	10	5 3	1	6	4 0	2	12	8 0
500	0	8	8 3	1	1	11 0	2	3	10 1
400	0	7	0 0	0	17	6 0	1	15	1 0
300	0	5	2 3	0	13	1 3	1	6	3 3
200	0	3	5 3	0	8	9 1	0	17	6 2
100	0	1	8 3	0	4	4 2	0	8	9 1

A Table of Simple Interest at 8 per cent.

1 Day			5 Dayes			10 Dayes			20 Dayes		
s.	d.	q	s.	d.	q.	s.	d.	q	s.	d.	q.
0	0	4 2	1	11	2	3	11	1	7	10	2
0	0	4 0	1	8	3	3	6	0	7	0	0
0	0	3 2	1	6	1	3	0	3	6	1	2
0	0	3 0	1	3	2	2	7	1	5	2	2
0	0	2 2	1	0	2	2	2	0	4	4	0
0	0	2 0	0	10	1	1	8	3	3	5	2
0	0	1 2	0	7	2	1	3	2	2	7	0
0	0	1 0	0	5	0	0	10	1	1	8	2
0	0	0 2	0	2	2	0	5	0	0	10	1
0	0	0 1	0	2	1	0	4	2	0	9	0
0	0	0 1	0	2	0	0	4	0	0	8	0
0	0	0 1	0	1	3	0	3	2	0	7	0
0	0	0 1	0	1	2	0	3	0	0	6	0
0	0	0 1	0	1	1	0	2	2	0	5	0
5	0	0 0	0	1	0	0	2	0	0	4	1
0	0	0 0	0	0	3	0	1	2	0	3	1
0	0	0 0	0	0	2	0	1	0	0	2	0
0	0	0 0	0	0	1	0	0	2	0	1	0

The third Table of Simple Interest at 7 per cent.

	1 Moneth		2 Moneth		3 Moneth		4 Moneth	
l.	l.	s. d	l.	s. d.	l.	s. d.	l.	s.
10000	58:	6:8	116:	13:4	175:	0:0	233:	6:
9000	52:	10:0	105:	0:0	157:	10:0	210:	0:
8000	46:	13:4	93:	6:8	140:	0:0	186:	13:
7000	40:	16:8	81:	13:4	121:	10:0	163:	6:
6000	35:	0:0	70:	0:0	105:	0:0	140:	0:
5000	29:	3:4	58:	6:8	87:	10:0	117:	13:
4000	23:	6:8	46:	13:4	70:	0:0	93:	6:
3000	17:	10:0	35:	0:0	52:	10:0	70:	0:
2000	11:	13:4	23:	6:8	35:	0:0	46:	13:
1000	5:	16:8	11:	13:4	17:	10:0	23:	6:
900	5:	5:0	10:	10:0	15:	15:0	21:	0:
800	4:	13:4	9:	6:8	14:	0:0	18:	13:
700	4:	1:8	8:	3:4	12:	5:0	16:	6:
600	3:	10:0	7:	0:0	10:	10:0	14:	0:
500	2:	18:4	5:	16:0	8:	15:0	11:	13:
400	2:	6:8	4:	13:4	7:	0:0	9:	6:
300	1:	15:0	3:	10:0	5:	5:0	7:	0:
200	1:	3:4	2:	6:8	3:	10:0	4:	13:
100	0:	11:0	1:	3:4	1:	15:0	2:	6:
90	0	10:6	1:	1:0	1:	11:6	2:	1:
80	0:	9:4	0:	18:4	1:	8:8	1:	17:
70	0:	8:2	0:	16:4	1:	4:6	1:	12:

The third Table of Simple Interest at 7 per cent.

	1 Moneth			2 Moneth			3 Moneth			4 Moneth		
l.	l.	s.	d.	l.	s.	d.	l.	s.	d.	l.	s.	d.
60	0	7	0	0	14	0	1	1	0	1	8	0
50	0	5	10	0	11	8	0	17	6	1	3	4
40	0	4	8	0	9	4	0	14	0	0	18	8
30	0	3	9	0	7	0	0	10	6	0	14	0
20	0	2	4	0	4	8	0	7	0	0	9	4
10	0	1	2	0	2	4	0	3	6	0	4	8

l.	s.	d.	q.	s.	d.	q.	s.	d.	q.	s.	d.	q.
9	1	0	2	2	1	0	3	1	3	4	2	1
8	0	11	0	1	10	1	2	9	2	3	8	3
7	0	9	3	1	7	2	2	5	1	3	3	0
6	0	8	1	1	4	3	2	1	0	2	9	2
5	0	7	0	1	2	0	1	9	0	2	4	0
4	0	5	2	0	11	0	1	4	3	1	10	1
3	0	4	0	0	8	1	1	0	2	1	4	3
2	0	2	3	0	5	1	0	8	1	0	10	4
1	0	1	1	0	2	0	0	4	0	0	5	2
10 s	0	0	2	0	1	1	0	2	0	0	2	3
9	0	0	2	0	1	1	0	1	3	0	2	2
8	0	0	2	0	1	0	0	1	2	0	2	0
7	0	0	1	0	0	3	0	1	1	0	1	3
6	0	0	1	0	0	3	0	1	1	0	1	2
5	0	0	1	0	0	2	0	1	0	0	1	1

The fourth Table of Simple Interest at 6 per cent.

	1 Moneth			2 Moneth			3 Moneth			4 Moneth		
l.	l.	s.	d.	l.	s.	d.	l.	s.	d.	l.	s.	d.
500	2	10	0	5	0	0	7	10	0	10	0	0
400	2	0	0	4	0	0	6	0	0	8	0	0
300	1	10	0	3	0	0	4	10	0	6	0	0
200	1	0	0	2	0	0	3	0	0	4	0	0
100	0	10	0	1	0	0	1	10	0	2	0	0
90	0	9	0	0	18	0	1	7	0	1	16	0
80	0	8	0	0	16	0	1	4	0	1	12	0
70	0	7	0	0	14	0	1	1	0	1	8	0
60	0	6	0	0	12	0	0	18	0	1	4	0
50	0	5	0	0	10	0	0	15	0	1	0	0
40	0	4	0	0	8	0	0	12	0	0	16	0
30	0	3	0	0	6	0	0	9	0	0	12	0
20	0	2	0	0	4	0	0	6	0	0	8	0
10	0	1	0	0	2	0	0	3	0	0	4	0
9	0	0	9	0	1	9	0	2	8	0	3	6
8	0	0	8	0	1	7	0	2	4	0	3	0
7	0	0	7	0	1	4	0	2	1	0	2	8
6	0	0	6	0	1	2	0	1	9	0	2	4
5	0	0	5	0	1	0	0	1	6	0	2	0
4	0	0	4	0	0	9	0	1	3	0	1	8
3	0	0	3	0	0	7	0	0	10	0	1	0
2	0	0	2	0	0	4	0	0	7	0	0	8
1	0	0	1	0	0	2	0	0	2	0	0	4

Directions for the understanding of the foregoing Tables of Interest.

THe first Table shews the Interest of any sum of mony under 10000 *l.* at ten *per cent. per annum*, from 1 to four months: the second Table is of eight *per cent. per annum*, for any sum from 10000 *l.* to 1 *s.* from eight months to one day: the third Table for interest, at 7 *per cent. per annum*: the fourth, for interest, at 6 *per cent. per annum*; all so plain and easie, they need no explanation; yet for the satisfaction of the meanest capacity, here follow examples: First, I would desire to know the interest of 100 *l.* for 3 months, at 10 *per cent. per annum*, seek in the Table of ten *per cent.* (being the first) and find out in the first column your sum, then direct your eye in a line towards your right hand under the 3 months, you shall find 2 *l.* 10 *s.* the sum desired. Secondly, I desire to know the interest of 1000 *l.* at 8 *per cent.* for 6 months: Seek in the first column of the Table of 8 *per cent.* for your sum, then toward the right hand, under the sixt month is 40 *l.* the sum desired. Thirdly, I would know the Interest of 300 *l.* for 2 months at 7 *per cent.* Seek in the first

colomn of the Table of the 7 *per cent.* for your ſum, and under the 2 month, you have 3 *l.* 10 *s.* the ſum deſired. Fourthly, the Intereſt of 500 *l.* for four months at 6 *per cent.* you will find (obſerving the ſame direction you didin the other Example) to be 10 *l.*

If you deſire to know the Intereſt of any ſum of compounded Figures, as 1246 *l.* or 423 *l.* or 27 *l.* or the like, take theſe Examples. To know the Intereſt at 8 *l. per cent.* of 1642 *li.* 16 *s.* for two months; Look in the table of Intereſt at 8 *li. per cent.* for the Intereſt of 1000 pound, you will find it for two months to be 13 *l.* 6 *s.* 8 *d.* then find out in the Table of hundreds, for the Intereſt of 200 *li.* which you will find to be for two Moneths 2 *li.* 13 *s.* 4 *d.* then in the Table of leſſer ſums at 8 *li. per cent.* find the Intereſt of 46 *li.* the Intereſt of 40 *li.* at 8 *li. per cent.* for two moneths is 10 *s.* 8 *d.* and 6 *li.* for two months in the next Table after, you will find to be 1 *s.* 7 *d.* half farthing, all which adde together is 16 *li.* 12 *s.* 3 *d.* half farthing, and ſo any ſum at either rates. And although theſe Tables of Intereſt, be calculated but for 10000 *li.* to 1 *s.* from 1 day to 1, 2, 3, 4, 5, 6, 7, 8 Months; for 10, 8, 7, 6 *per cent.* yet obſerving the following direction, by them you may know far greater ſums, for longer

time

time at a greater or leſſer rate. If you deſire for greater ſums then is expreſſed in the Table, find the Intereſt for 1 half, 1 quarter, 1 ſixt, or 1 tenth of the ſum deſired, and multiply the ſame by the parts you will find your deſire. Example: I would know the Intereſt of 20000 *li.* at 10.8.7. or 6 *per cent.* find the Intereſt of 1000 *li.* for the rate and time deſired, and multiply it by 20, or find the Intereſt of 2000, and multiply it by 10. or the Intereſt of 5000 and multiply it by 4 you have your deſire. If you deſire to know the Intereſt of any ſum for longer time then the Table expreſſes: find out what the Intereſt is for one half the time, one third, or one fourth the time, & multiply it as if you deſire to know the Intereſt at any ſum at 10. 8, 7, 6 *per cent.* for 12, 16, 18, or 20 months: Firſt, find what it comes to for 6 months, and double it, you find what it comes to at 12 or 4 months, multiplyed by 4, give the Intereſt for 16. 6 multiplyed by 3, ſhew what it comes to for 18. 5 multipled by 4 produces what it comes to for 20 months, and of any of the like. Laſtly, if you deſire any ſum comes to at greater or leſſer rates, then the Table expreſs, that is to ſay, if you deſire to know what any ſum of mony comes to at 20. 18. 16. 12. 9. 5. 4. 3. 2. 1. *per cent.* you may take notice

that 1 *per cent.* is the one sixt of 6 *per cent.* 2 the one third of 6; or the one fourth of 8, 3 the one half of 6. or one third of 9. 3 and half *per cent.* is half 7 *per cent.* 4 *per cent.* is half 8 *per cent.* 5 *per cent.* is half 10 *per cent.* 12 *per cent.* is double 6 *per cent.* 14 *per cent.* is double 7 *per cent.* 16 *per cent.* is double 8 *per cent.* 18 *per cent.* is treble 6 *per cent.* 20 *per cent.* is double 10 *per cent.* Many more examples might be given; but I make no question, he that hath the fortune to have Mony to put to Interest; or is fit to be trusted with Interest Money, hath wit enough to understand by what hath been already said. If any question the exactnesse of those Tables, Instructions have been already given for the perfect working of Interest at any rate.

In the next place is a Table of Simple Interest of Rebate, at 8 *per cent. per annum*, from 1000 *l.* to 3 *li.* from one to twelve months, very necessary for any that buy or sell commodities for time, or to know what is to be rebated for money paid before it be due.

A Table of Simple Interest to rebate at 8 per centum.

	1 Month			2 Month			3 Month.			4 Month.		
l.	l.	s.	d	l.	s.	d.	l.	s.	d.	l.	s.	d.
1000	06.	12.	05	13.	03.	01	19.	12.	01	25.	19.	05
900	05.	19.	02	11.	16.	10	17.	12.	11	23.	07.	06
800	05.	05.	11	10.	10.	06	15.	13.	08	20.	15.	07
700	04.	12.	08	09.	04.	02	13.	14.	06	18.	03.	07
600	03.	19.	08	07.	17.	10	11.	15.	03	15.	11.	08
500	03.	06.	02	06.	11.	06	09.	16.	00	12.	19	08
400	02.	12.	11	05.	05.	03	07.	16.	10	10.	07.	09
300	01.	19.	08	03.	18.	11	05.	17.	07	07.	15.	10
200	01.	06.	05	02.	12.	07	03.	18.	05	05.	03.	10
100	00.	13.	02	01.	06.	03	01.	19.	02	02.	11.	11
90	00.	11.	11	01.	03.	08	01.	15.	03	02.	06.	09
80	00.	10.	07	01.	01.	00	01.	11.	04	02.	01.	06
70	00.	09.	03	00.	18.	05	01.	07.	05	01.	16.	04
60	00.	07.	11	00.	15.	09	01.	03.	06	01.	11.	02
50	00.	06.	07	00.	13.	01	00.	19.	07	01	05.	11
40	00.	05.	03	00.	10.	06	00.	15.	08	01.	00.	09
30	00.	03.	11	00.	07	10	00.	11.	09	00.	15.	07
20	00.	02.	07	00	05.	03	00.	07.	10	00.	10.	04
10	00.	01.	03	00.	02.	07	00.	03.	11	00.	05.	02
9		1.	2		2.	4		3.	6		4.	8
8		1.	0		2.	1		3.	1		4.	1
7		0.	11		1.	10		2.	8		3.	7
6		0.	9		1.	6		2.	4		3.	1
5		0.	7		1.	3		1.	11		2.	7
4		0.	6		1.	0		1.	6		2.	0
3		0.	4		0.	9		1.	2		1.	6

A Table of Simple Interest to rebate at 8 per centum.

	5 Month.			6 Month.			7 Month.			8 Month.		
l.	l.	s.	d.	l.	s.	d.	l.	s.	d.	l.	s.	d.
1000	32.	05.	01	38.	09.	02	44.	11.	08	50.	12.	07
900	29.	00.	07	34.	12.	03	40.	02.	06	45.	11.	04
800	25.	16.	01	30.	15.	04	35.	13.	04	40.	10.	01
700	22.	11.	07	26.	18.	05	31.	04.	02	35.	08.	10
600	19.	07.	01	23.	01.	06	26.	15.	00	30.	07.	07
500	16.	02.	06	19.	04.	07	22.	05.	10	25.	06.	03
400	12.	18.	00	15.	07.	08	17.	16.	08	20.	05.	00
300	09.	13.	06	11.	10.	09	13.	07.	06	15.	03.	09
200	06.	09.	00	07.	13.	10	08.	18.	04	10.	02.	06
100	03.	04.	06	03.	16.	11	04.	09.	02	05.	01.	03
90	02.	18.	00	03.	09.	02	04.	00.	03	04.	11.	01
80	02.	11.	07	03.	01.	06	03.	11.	04	04.	01.	00
70	02.	05.	01	02.	13.	10	03.	02.	05	03.	10.	10
60	01.	18.	08	02.	06.	01	02.	13.	06	03.	00.	09
50	01.	12.	03	01.	18.	05	02.	04.	07	02.	10.	07
40	01.	05.	09	01.	10.	09	01.	15.	08	02.	00.	06
30	00.	19.	04	01.	03.	00	01.	06.	09	01.	10.	04
20	00.	12.	10	00.	15.	04	00.	17.	10	01.	00.	03
10	00.	06.	05	00.	07.	08	00.	08.	11	00.	10.	01
9		5.	9		6.	11		8.	0		9.	1
8		5.	1		6.	1		7.	1		8.	1
7		4.	6		5.	4		6.	2		7.	1
6		3.	10		4.	7		5.	4		6.	0
5		3.	2		3.	10		4.	5		5.	0
4		2.	6		3.	0		3.	6		4.	0
3		1.	11		2.	3		2.	8		3.	0

A Table of Simple Interest to rebate at 8 per cent.

l.	9 Month. l. s. d.	10 Month. l. s. d.	11 Month. l. s. d.	12 Month. l. s. d.
1000	56.12.00	62.10.00	68.06.05	74.01.05
900	50.18.10	56.05.00	61.09.05	66.13.04
800	45.05.07	50.00.00	54.13.02	59.05.02
700	39.12.05	43.15.00	47.16.06	51.17.00
600	33.19.02	37.10.00	40.19.10	44.08.10
500	28.06.00	31.05.00	34.03.01	37.00.08
400	22.12.09	25.00.00	27.06.07	29.12.07
300	16.19.07	18.15.00	20.09.11	22.04.05
200	11.06.04	12.10.00	13.13.03	14.16.03
100	05.13.02	06.05.00	06.16.07	07.08.01
90	05.01.10	05.12.06	06.02.11	06.13.04
80	04.10.06	05.00.00	05.09.05	05.18.06
70	03.19.02	04.07.06	04.15.07	05.03.08
60	03.07.11	03.15.00	04.01.11	04.08.10
50	02.16.07	03.02.06	03.08.03	03.14.00
40	02.05.03	02.10.00	02.14.07	02.19.03
30	01.13.11	01.17.06	02.00.11	02.04.05
20	01.02.07	01.05.00	01.07.03	01.09.07
10	00.11.03	00.12.06	00.13.07	00.14.09
9	10. 2	11. 3	12. 3	13. 4
8	9. 0	10. 0	10.11	11.10
7	7.11	8. 9	9. 6	10. 4
6	6. 9	7. 6	8. 2	8.10
5	5. 7	6. 3	6. 9	7. 4
4	4. 6	5. 0	5. 5	5.11
3	3. 4	3. 9	4. 1	4. 5

The uſe of the Table for Rebate at 8 per cent. per annum.

THe uſe of the Table of Rebate, is to know what ought to be allowed for the payment of money before it be due, after the rate of 8 in the hundred, for any ſumme from 1 *l.* to 1000 *l.* from one to twelve months; ſo that if a man buy or ſell goods for time, they may know what is gotten or loſt by the giving or taking of time; as for example, I buy goods to the value of 360 pounds for 8 months time, I would know how much I ought to have allowed me if I pay preſent money; firſt look what is to be rebated for 300*l.* for 8 months over againſt 300*l.* and under 8 months I finde 15*l.* 3*s.* 9*d.* halfe penny, then I finde alſo the rebate of 60 pound for 8 months to be 3*l.* 0*s.* 9*d.* to which adde 15*l.* 3*s.* 9*d.* ½ makes 18*l.* 4*s.* 6*d.* ½, which is to be rebated of the 360 *l.* for payment thereof 8 months before it be due. Againe, if I ſell a commodity to the value of 400*l.* to pay 100 *l.* at the

end of every 3 months; what is to be rebated if all the money be paid at the end of 1 month? First seek the Rebate of 100*l.* for 2 months, then the rebate of 100*l.* for 5 months, 100 *l.* for 8 months, and 100*l.* for 11 months, shewes your desire, by which may be observed that to abate 8 *l.* for the payment of 100 *l.* 12 months before it be due, is (although common) yet a great mistake, for it is but 7 *l.* 8 *s.* 1 *d.* 3 *q.*

The digit Numbers so placed that three of them produce 15, eight severall wayes.

8	3	4
1	5	9
6	7	2

The

The true value of a yearly payment of 20 l. and so of any sum for any tearm of years 1. 21. at 8 per cent. Usefull to know the value of Annuities Leaset, Fines.

Years.	l.	s.	d.	q.
1	18	10	4	0
2	35	13	3	2
3	51	10	10	0
4	66	4	10	0
5	79	17	1	0
6	92	9	1	2
7	104	2	6	2
8	114	18	7	2
9	124	18	9	0
10	134	4	0	0
11	142	14	7	0
12	150	15	5	0
13	158	1	6	0
14	164	17	8	0
15	171	3	9	2
16	177	0	0	2
17	182	8	8	0
18	187	8	8	0
19	192	1	1	0
20	196	7	7	2
21	200	6	6	2

The yearly decrease of 20 l. and so of any sum paid before due, for any terms to 21 years. Usefull for Improvement of Rent or payment of any sum before hand, for any such tearm at 8 per cent.

Years.	l.	s.	d.	q.
1	9	5	2	0
2	8	11	5	2
3	7	18	9	0
4	7	7	0	0
5	6	15	1	1
6	6	7	1	1
7	5	16	8	0
8	5	8	0	2
9	5	0	0	2
10	4	12	7	2
11	4	5	9	0
12	3	19	4	3
13	3	13	6	1
14	3	8	0	3
15	3	3	0	1
16	2	18	4	1
17	2	14	4	2
18	2	10	0	2
19	2	6	4	0
20	2	2	10	3
21	1	19	8	2

The yearly increase of 10 l. interest upon Interest at 8 per cent. Usefull for any that put forth, or forbear any sum of Money calculated for 21 years.

Years.	l.	s.	d.
1	10	16	0
2	11	13	3
3	12	11	11
4	13	12	1
5	14	13	10
6	15	13	4
7	17	2	9
8	18	10	2
9	19	19	9
10	21	11	9
11	23	6	3
12	25	3	7
13	27	3	11
14	29	7	5
15	31	14	5
16	34	5	2
17	36	19	11
18	39	19	2
19	43	3	1
20	46	12	2
21	50	6	9

The increase of an yearly payment of 10 l. Usefull for such as forbear, or to are receive recompence for yearly payment detained, at 8 per cent. composed for 21 years.

Years.	l.	s.	d.
1	10	0	0
2	20	16	0
3	32	9	3
4	45	1	2
5	58	13	3
6	73	7	2
7	89	4	6
8	106	7	3
9	124	17	6
10	144	17	3
11	166	9	1
12	189	15	5
13	214	19	0
14	242	2	11
15	271	10	4
16	303	4	10
17	337	10	9
18	374	10	0
19	414	9	2
20	457	12	4
21	504	4	6

A Table of the Names, Weight, and Valuation of Englisſh Gold.

The Names and Titles of the Gold.	The weight. Penny Weight:	grain.	The Value. s.	d.
The Royall	4	23	16	6
The half Royall	2	11	8	3
Old Noble	4	6	14	0
Half old Noble	2	4	7	0
Angell	3	8	11	0
Half Angel	1	16	5	6
Salute	2	5	6	11 ob.
Two part of a Salute	1	11	4	7
George Noble	2	0	9	11
Half George Noble	1	12	4	11 ob.
Firſt Crown, K. H. &	2	9	6	11 ob.
Baſe Crown, K. H.	2	0	5	6
Great Soveraign	10	0	33	0
Beſt Soveraign, K. H.	3	14	11	8
Soveraign K. H.	4	0	11	0 ob.
Edward Soveraign.	3	14	11	0
Elizabeth Soveraign	3	14	11	0
Elizabeth Crown	1	19	5	6
Unites of K. Iames	6	10	22	0
Double Crown, K. Iames	3	5	11	0
Brittain Crown, K. Ia.	1	14	5	6
Thiſtle Crown, K. Ia.	1	6	4	6 ob.
Half Brit. Crown, K. Ia.	0	19	2	9
Laſt Coyn of K. Charles	5	20	20	0
Half Peece, K. Charles,	2	22	10	0
The Quarter Peece, K. C.	1	11	5	0

The agreement between the 100 *l.* weight of *London*, and the weight of those places following. Collected of those which I think have gone the neareſt to the truth; being very uſefull for all that do deſire to know, or have occaſion to make uſe of forraign weight reduced into our weight uſed among us.

100 *l*, Weight at *London*, is at

	l.		*l.*
Antwerp	96	*Noremberg*	90
Cullen	90	*Burges*	90
Baſil	90	*Ausburgh*	95
Ulme	96	*Leipzig*	99
Preſlau	120	*Lubick*	95
Dantzig	116	*Geneva*	81
Roane	81	*Merſeiles*	112
Rochell	112	*Paris*	91
Tholouſe	110	*Genua*	141
Lyons	105	*Millain*	141
Venice ſmal weight	151	*Padoua*	132
Great weight	95	*Parma*	136
Farrara	133	*Ancona*	130
Florence	131	*Roma*	127
Naples	142	*Cicilia*	142
Aquilla	143	*Lisbone* ſmall weight	
Caſtill	102		90
Frankfort	90	Great weight	83

A Table of the Square and Cube Root.

Root	Square	Cube
1	1	1
2	4	8
3	9	27
4	16	64
5	25	125
6	36	216
7	49	343
8	64	512
9	81	729
10	100	1000
11	121	1331
12	144	1728
13	169	2197
14	196	2744
15	225	3375
16	256	4096
17	289	4913
18	324	5832
19	361	6859
20	400	8000
21	441	9261
22	484	10648
23	529	12167
24	576	13824
25	678	15625

A Table of the Square and Cube Root.

Root	Square	Cube.
26	676	17576
27	729	19683
28	784	21972
29	841	24389
30	900	27000
31	961	29791
32	1024	32768
33	1089	35937
34	1156	39304
35	1225	42825
36	1296	48656
37	1369	50653
38	1444	54872
39	1521	55419
40	1600	64000
41	1681	68921
42	1764	74088
43	1849	79507
44	1936	85184
45	2025	91125
46	2116	97336
47	2209	103823
48	2304	110592
49	2401	117649
50	2500	125000

A Table of the Square and Cube.

Root.	Square.	Cube.
51	2601	135651
52	2704	140608
53	2809	148877
54	2916	157464
55	3025	167375
56	3136	175616
57	3249	185193
58	3364	195112
59	3481	205379
60	3600	216000
61	3721	216981
62	3844	238328
63	3969	250047
64	4096	262244
65	4225	274625
66	4356	287496
67	4489	300753
68	4624	314432
69	4771	329199
70	4900	333000
71	5041	357911
72	5184	373348
73	5329	389017
74	5476	405224
75	5625	411875

A Table of the Square and Cube.

Root.	Square.	Cube.
76	5776	438976
77	5929	456533
78	6084	474522
79	6241	493039
80	6400	512000
81	6561	531441
82	6724	550408
83	6889	571787
84	7056	592604
85	7225	614125
86	7396	636056
87	7569	648303
88	7744	681472
89	7921	705669
90	8100	729000
91	8281	753571
92	8464	778688
93	8649	804357
94	8836	830584
95	9025	857375
96	9216	884736
97	9409	915673
98	9604	941192
99	9801	970299
100	10000	1000000

The use of the Table of the Square and Cube Root.

IN this Table you have the Square and Cube of any number from 1 to 100; suppose the root to be any number given not exceeding 100, find out your Root or number in the first Column under Root, in a direct line in the next Column you have the square of your N. desired, in the third column you have the Cubical number of your Root.

A Square is a regular Superficies of 4 equall sides; a body of men standing Regular, as many in Rank as File, is a Regular square body: Land, Glass, Board, or Stone of equal sides, that is as broad as long, is a Regular Square.

A Cube is a solid body comprised of 6 equall sides, and is accounted (by Geometricians) one of the 5 regular bodies. A stone or peece of Timber that is as thick as broad and as broad as long in form of a Die, is a Regular Cube body.

Many pleasant and profitable Questions is answered by the Table of Square and Cube Number. A piece of Land which is 40 Rods

Rods long, and 40 Rods broad, how many Rods doth it contain? find out your Root, Number, and the Square of it you will find to be 1600 your desire. A body of men standing 86 in Rank, and 86 in File, by the Table of Squares, is 7396, 26 in Ranke, and 26 in File, is 676 in a Cube body of one foot, or 12 inches every way in form of a Die, how many solid inches will it make? finde the Cube of 12, which is 1728; the Square of 12 is 144. Infinite are the Propositions answered by the Table of Square and Cube; but the ingenious may with ease spare me labour in giving many examples.

FINIS.

LONDON,
Printed by *Richard Coves* for *John Sweeting* at the *Angell* in *Popeshead Alley*, 1649.